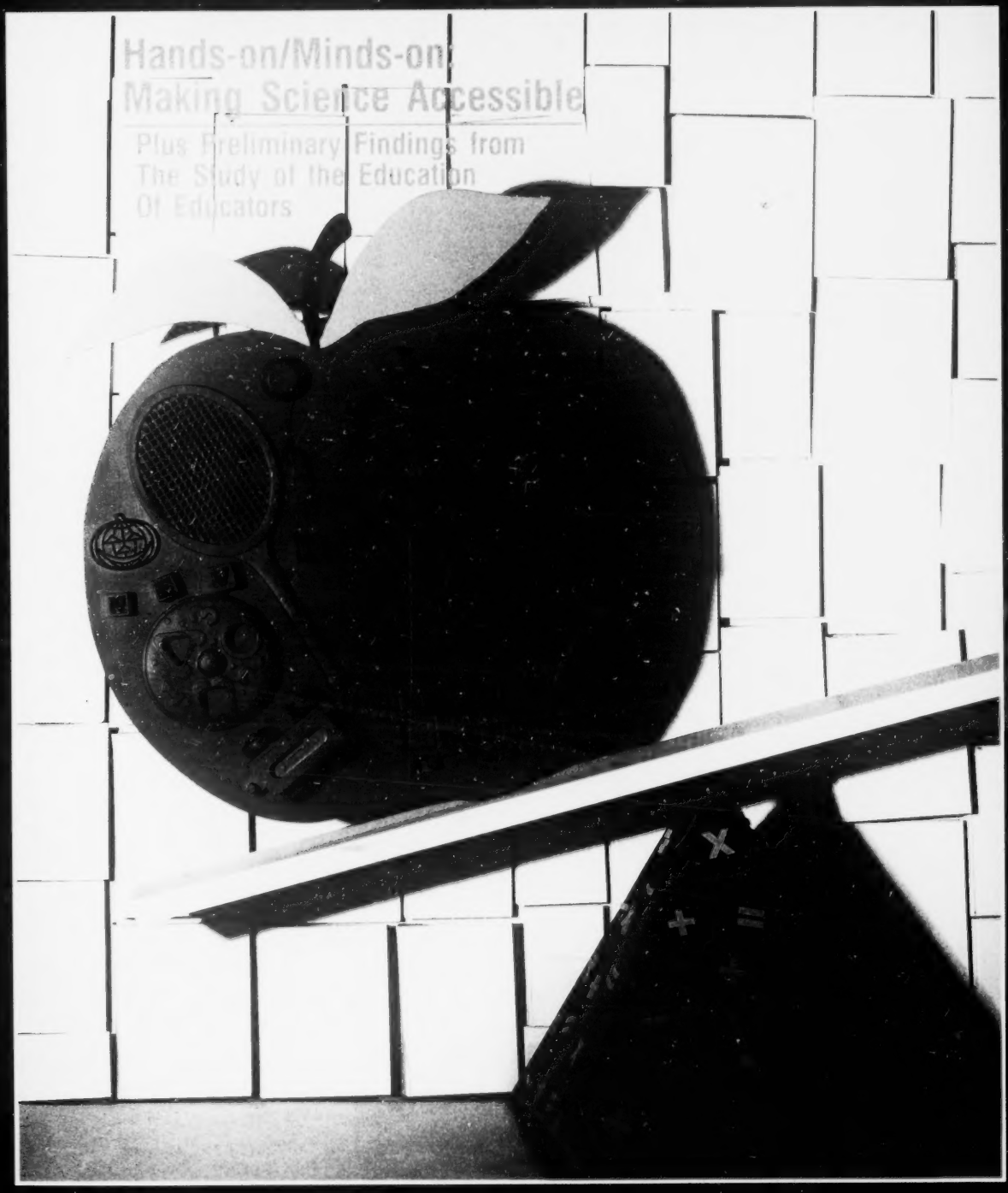
PHI DELTA

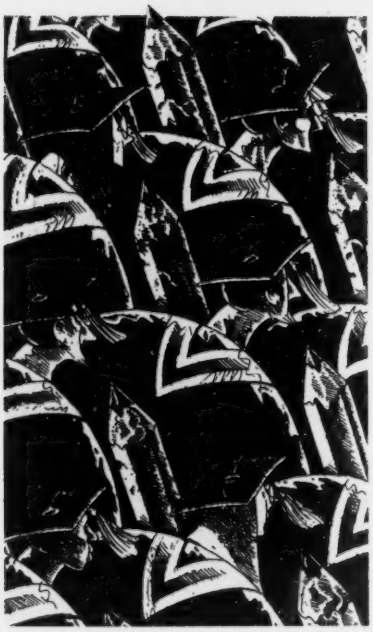
MAY 1990

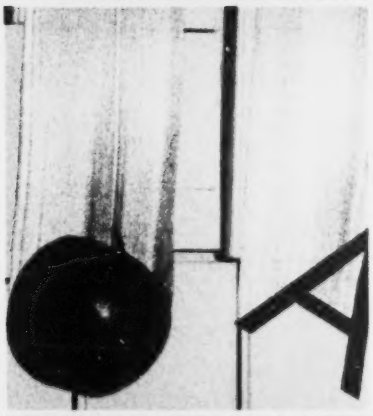
# KAPPAN

## Hands-on/Minds-on: Making Science Accessible

Plus Preliminary Findings from The Study of the Education Of Educators







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**Cover Construction: Joe LaMantia**

# Two Gifts for the Governors

AS I WRITE these words, my daughters, aged 5 and 8, are at a planetarium in Indianapolis, and I've just finished reading *Education Week*'s coverage of the governors' proposed goals for education. All the governors' goals are ambitious; a few are wise; some are vague; at least one is downright misguided. This last one states that U.S. students will be "first in the world in mathematics and science achievement" by the year 2000.

This goal and several of the others have already come in for a dollop or two of criticism from educators. And despite a natural bent toward cynicism, I agree with Ernest Boyer that the worst thing educators can do is to "dismiss" the goals or become "cynical" about them. What's more, I'm cheered by the governors' recognition that real improvement in science education will take time – at least a decade by their reckoning.

So in the spirit of cooperation, I'd like to offer the governors and other policy makers two gifts: a *Kappan* special section on science education that is a real winner and a new agenda to replace their chant of "we're (gonna be) number one."

First, the special section. Deborah Fort leads off with an unusual perspective on gifts and talents in science; she concludes that *everyone* needs to experience a rich and lively curriculum in science so that "gifts" can be identified and developed into "talents." Iris Rotberg reminds readers that a great many such gifts are withering by the wayside because few minority students are being given access to the rich and inviting curriculum that Fort prescribes.

Then Bruce Watson and Richard Konicek take readers to a classroom in which a teacher chooses to teach science for conceptual change. The approach is time-consuming, and the fourth-graders find it discomforting at first. But when you've finished this tale of young scientists at work, you will never look at a warm scarf in the same way again. Next, Yvonne Estes reports on an 18-month program to improve elementary science instruction that involves practicing teachers, university-based science educators, and groups of elementary students from a range of socioeconomic backgrounds. Finally, Richard Shavelson, Neil Carey, and Noreen Webb take a hard look at typical measures of achievement in science and suggest some better ways to assess science learning.

Which brings me back to the "first in science achievement" goal. Presumably, the governors' goal is a response to the disappointing performance of U.S. students on international assessments. Certainly, their concern reflects our national fascination with test scores. But trying to improve performance on such measures is akin to putting the thermometer in the freezer so that we won't feel hot this summer. It's the weather that matters, not the height of the column of mercury. If U.S. students improved significantly on these tests – even if they made it to the top – what would be gained? Would we then be a nation of scientific literates? Would our students have formed the habits of mind that thinking like a scientist requires? Don't you believe it!

And that brings me to my second gift to the governors: a gift designed to help change the weather, not just the thermometer reading. All of the topics addressed by the authors in this month's special section can be found in *Science for All Americans*, a February 1989 publication of Project 2061 of the American Association for the Advancement of Science. My recommendation is simple: that the governors replace their misguided goal with the "Agenda for Action" that begins on page 162 of *Science for All Americans*.

By the way, my younger daughter informs me that you can't land a spacecraft on Neptune, because it's just a huge ball of gas. My older daughter asks, Why doesn't it just blow away? – BMS

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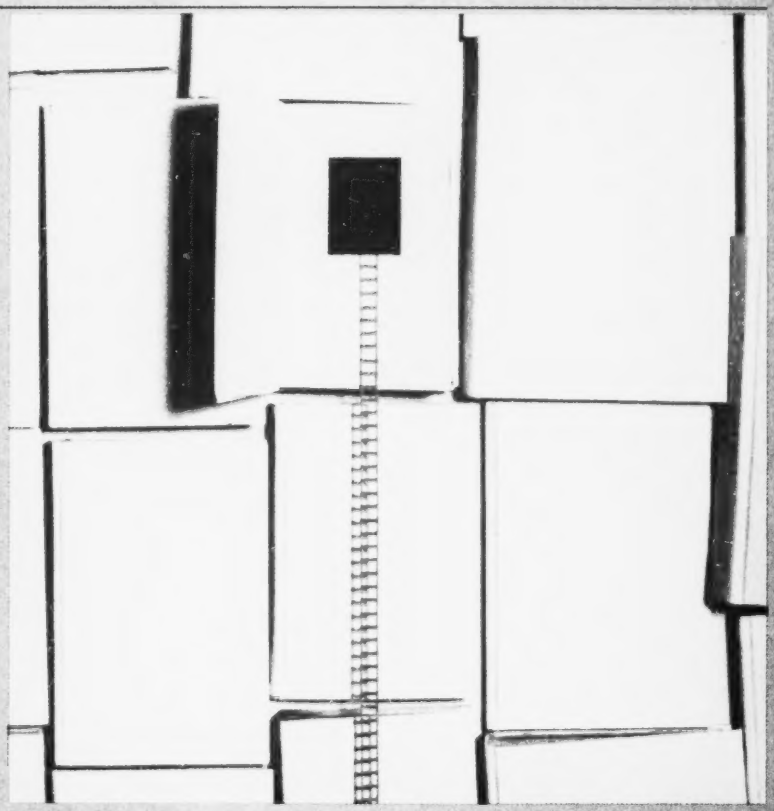
# Resources and Reality: The Participation of Minorities In Science and Engineering Education

*Negative trends with respect to financial resources and institutional priorities, which affect the entire student population, are particularly troublesome for minorities, Ms. Rotberg notes — and especially for those who are interested in entering science and engineering.*

BY IRIS C. ROTBERG



THERE IS general agreement about the importance of increasing the participation of underrepresented minorities in undergraduate and graduate education in science and engineering. There is less agreement, however, about the commitment — public and private — to provide the resources and policy initiatives that will significantly improve the rate of minority participation. While the number of minority students in some fields of science and engineering has grown more over the past generation than most commentators have acknowledged, their underrepresentation remains a serious problem.

At first glance, there seem to be a great many programs across the country that are designed to provide academic or financial support to encourage increased minority participation in science and engineering. Some of these programs have shown impressive results. However, even the most effective "special" programs can serve only a relatively small number of students. The issue is whether these programs alone can create significant increases nationwide in the number of minority students enrolled in courses in science and engineering.

The fact is that even these highly commendable programs are in danger of being overshadowed by more general, negative trends with respect to institutional priorities and available financial resources. Moreover, these negative trends affect large numbers of potential students, and they create unintended barriers to increased participation. Although the effects of these trends are not limited to science and engineering or to minority students, they are especially troublesome in these areas.

The following are the major trends that affect minority students seeking to obtain

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*Illustration by Joe LaMantia*

an education in science or engineering.

- The growing financial pressures on colleges and universities have increased tuition far faster than inflation. The decline in the real value of financial aid, combined with increased reliance on loans, has exacerbated the problem. Many minority youths have chosen not to enroll in higher education at all; others have chosen lower-quality institutions. Students considering graduate school face a long-term decline in federally funded fellowships and traineeships; at the same time many have already assumed a large debt burden from their undergraduate education.
- Financial considerations have contributed to an increasing polarization of the college population in different types of institutions. Few students can afford expensive colleges, and many elite institutions are under substantial financial pressure to select increasing proportions of high-income students. As a result, many of the colleges that have the strongest undergraduate programs – indeed, those with the environment that the special programs noted above attempt to replicate – are growing less accessible to low-income students. This polarization is compounded by the fact that low-income and minority students are increasingly attending community colleges, at least in part because of costs. Only a small proportion of low-income and minority students who attend community colleges go on to receive bachelor's degrees.
- There has been a long-term trend for colleges and universities to give lower priority to undergraduate teaching and greater attention to research and a range of other priorities. At the same time, research evidence suggests that the institutional environment, especially the time that faculty members spend with students, can make a major difference in minority students' achievement and retention in science and engineering programs.

These trends affect both the access of minority students to science and engineering education and their decisions about majoring in science and engineering and attending graduate school. Indeed, any changes in access and retention can make a noticeable difference in a relatively short period of time. A recent report from the Office of Technology Assessment put it this way:

> If the nation wants more scientists and engineers relatively quickly, then retaining college and graduate students in science and engineering is the most useful policy strategy. Many able students leave science during college, after earning baccalaureate degrees, and during graduate school. Only about 30% of baccalaureate science and engineering graduates enter full-time graduate study, and nearly half of science and engineering doctoral candidates never earn Ph.D.s. Some loss is inevitable and, indeed, beneficial to other fields, but those who leave unwillingly and prematurely are a rich resource that could be tapped. Because attrition rates are so high and the population of research scientists and engineers is relatively small (only 4% of American workers), slight improvements in retention could increase significantly the number of scientists and engineers in the work force.[1]

This article considers, first, the recent trends in minority enrollment in science and engineering education and presents some examples of programs that have shown gains. And second, it analyzes the policies and priorities that appear to hinder continued progress in increasing the enrollment of minorities in science and engineering programs.

## TRENDS IN MINORITY ENROLLMENT

Societal and economic changes in recent decades have led to significant gains in the participation rates of minorities in some fields of science and engineering education. Many of these gains have occurred in less than a single generation. While the number of minorities in science and engineering fields remains small and while some trends are disturbing (e.g., the declining college attendance rates among minorities), most indicators suggest that the potential exists for significant future increases in minority participation. However, the environment is fragile, and public and private policies with respect to institutional priorities and financial aid can play an important role in encouraging – or blocking – future gains.

### UNDERGRADUATE EDUCATION

Between 1977 and 1987, even though overall college participation rates lagged, the number of minorities who received bachelor's degrees in several key science and engineering fields increased, both in absolute numbers and as a percentage of the total degrees awarded in these fields (see Table 1).[2] The largest gains were in

**TABLE 1.**
**Recipients of Bachelor's Degrees in Science and Engineering By Field and Racial/Ethnic Group: 1977 and 1987**

| Field | Total, U.S. Citizens And Permanent Residents | | White | | Black | | Asian | | Native American | | Hispanic | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1977 | 1987 | 1977 | 1987 | 1977 | 1987 | 1977 | 1987 | 1977 | 1987 | 1977 | 1987 |
| Physical sciences | 22,038 | 19,027 | 20,417 | 16,653 | 692 | 823 | 377 | 894 | 68 | 72 | 484 | 585 |
| Mathematical sciences | 13,977 | 15,506 | 12,602 | 13,265 | 712 | 834 | 316 | 1,034 | 26 | 52 | 321 | 321 |
| Computer sciences | 6,161 | 35,943 | 5,508 | 29,181 | 361 | 2,820 | 163 | 2,455 | 15 | 112 | 114 | 1,375 |
| Life sciences | 131,430 | 101,085 | 119,442 | 86,858 | 5,860 | 5,251 | 2,578 | 4,107 | 424 | 420 | 3,126 | 4,449 |
| Psychology | 47,297 | 41,248 | 41,494 | 35,761 | 3,221 | 2,451 | 807 | 1,154 | 167 | 180 | 1,608 | 1,702 |
| Social sciences | 116,622 | 91,347 | 100,191 | 78,940 | 10,360 | 5,746 | 1,664 | 2,853 | 474 | 449 | 3,933 | 3,359 |
| Engineering | 46,093 | 85,134 | 42,072 | 71,866 | 1,385 | 3,420 | 1,211 | 6,378 | 135 | 283 | 1,290 | 3,187 |

Source: *Women and Minorities in Science and Engineering* (Washington, D.C.: National Science Foundation, January 1990), pp. 136-37.

TABLE 2.

**Recipients of Master's Degrees in Science and Engineering By Field and Racial/Ethnic Group: 1977 and 1987**

| Field | Total, U.S. Citizens And Permanent Residents | | White | | Black | | Asian | | Native American | | Hispanic | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1977 | 1987 | 1977 | 1987 | 1977 | 1987 | 1977 | 1987 | 1977 | 1987 | 1977 | 1987 |
| Physical sciences | 4,689 | 4,271 | 4,363 | 3,834 | 94 | 79 | 142 | 227 | 21 | 9 | 69 | 122 |
| Mathematical sciences | 3,328 | 2,331 | 3,048 | 2,012 | 133 | 73 | 90 | 183 | 12 | 3 | 45 | 60 |
| Computer sciences | 2,432 | 5,848 | 2,208 | 4,717 | 67 | 207 | 103 | 779 | 3 | 22 | 46 | 123 |
| Life sciences | 22,327 | 20,961 | 20,262 | 18,687 | 914 | 888 | 595 | 663 | 72 | 68 | 484 | 655 |
| Psychology | 8,149 | 7,493 | 7,201 | 6,698 | 506 | 376 | 95 | 113 | 26 | 35 | 321 | 271 |
| Social sciences | 14,013 | 7,867 | 12,364 | 6,979 | 969 | 390 | 275 | 234 | 36 | 22 | 369 | 242 |
| Engineering | 12,695 | 15,947 | 11,444 | 13,239 | 240 | 433 | 737 | 1,692 | 23 | 63 | 251 | 520 |

Source: *Women and Minorities in Science and Engineering* (Washington, D.C.: National Science Foundation, January 1990), pp. 144-45.

engineering and computer science, but small gains also occurred in the physical and mathematical sciences. Degree patterns for minorities generally follow those of the student body as a whole. Thus there has been a trend toward engineering and computer science and away from life sciences, psychology, and the social sciences, which is consistent with overall patterns for the entire population.

A recent report by the National Action Council of Minorities in Engineering shows that the rate of increase of minority enrollments in undergraduate engineering programs continues to outstrip the rate of increase for the student population as a whole. In 1988, 11,754 black, Hispanic, and Native American students enrolled in undergraduate engineering programs, up from 10,325 students in 1987 for an increase of 13.8%. The corresponding increase for the total freshman population in engineering was only 2.7%.[3]

## GRADUATE EDUCATION

The trends for minority students in graduate schools are consistent with those for the student population as a whole: minority students generally earned more graduate degrees in engineering and computer science in the late 1980s than they did 10 years earlier, and they earned fewer graduate degrees in several other scientific fields (see Tables 2 and 3).[4]

In the case of minorities, however, the numbers were so small to begin with that percentage increases do little to alleviate the basic problem. For example, the increase in engineering doctorates between 1978 and 1988 meant that blacks went from 13 engineering doctorates in 1978 to 31 in 1988; Native Americans, from two to four; and Hispanics, from 32 to 63. For other fields, such as mathematics, the extremely small number of doctorates awarded to minorities in previous years has now been reduced even further. However, recent reports about increased graduate enrollments in these fields are encouraging. For instance, about 600 more black U.S. citizens enrolled in science and engineering programs in doctorate-granting institutions in 1988 than in 1987.[5] The gains were spread over all fields except mathematics, which continued to exhibit a decline. Nonetheless, the societal trends that have discouraged U.S. students from pursuing doctoral degrees – cost, length of time to earn a doctorate, competing job opportunities – will be especially damaging to minorities and to the society as a whole, if there continue to be only very small numbers of minority professionals in science and engineering to serve as mentors or role models.

## INDICATORS OF FUTURE GROWTH

However, there are indications that the student pool from which many science and engineering majors are drawn will grow. Given the high correlations between such indicators as parental education, family income, and achievement, the continued growth in the number of middle-class minority families could be expected to exert strong intergenerational effects on the educational attainment of minority children as a group. Indeed, as a result of the major increases in college attendance for minority groups during the 1970s, the children of these college students could be an important source of enrollments in science and engineering programs during the next two decades. While the number of potential science and engineering students will certainly increase, the reality is that institutional priorities and public policies with respect to financial aid will influence how many of these students actually choose to enter and remain in science and engineering.

One indicator of the gains that have already been made is the significant improvement in the test scores of minority students on a range of tests, including the National Assessment of Educational Progress (NAEP), the Scholastic Aptitude Test (SAT), the American College Testing (ACT) Program, and the Graduate Record Examination (GRE).[6] Increased scores have occurred at all age levels, both in absolute terms and relative to the test scores of whites. Despite the continuing gap, the overall trend for minorities is clearly upward. It must be noted that the comparisons do not control for family income and level of parental education – two variables that are highly correlated with test scores and that are substantially lower for minority groups than for the population as a whole. For instance, in 1985, 68% of blacks who took the SAT came from families with annual incomes of less than $24,000, while only 27% of whites came from families with annual incomes at that level. Thirty-four percent of the black students came from families with annual incomes of less than $12,000.[7]

It is likely that a number of factors have contributed to these achievement gains – including the emphasis over the past 20

years on supplemental academic programs for disadvantaged children. Nonetheless, the increasing proportion of minority children growing up in middle-income families has clearly played a role, even though this proportion remains small compared to the middle-class population as a whole.

## SOME SUCCESSFUL PROGRAMS

Some programs that provide academic support to encourage minorities to enter or to continue in science and engineering have shown positive results. These programs are sponsored at precollege, undergraduate, and graduate levels by government and by the private sector. Virtually none have been formally evaluated. Nonetheless, the statistics from a few of the programs, along with anecdotal evidence from a number of others, suggest that the programs can serve an important purpose. However, they are not likely, by themselves, to result in major shifts in the rates of participation by minorities in science and engineering. They provide on-site support and cannot be expected to compensate for broader policies that affect much larger numbers of students.

A full description of the wide range of these programs is beyond the scope of this article. However, as examples of the potential benefits, I note two programs that have achieved especially dramatic results.

Philip Treisman's program at the University of California, Berkeley, which has been replicated at a number of other institutions nationwide, has received widespread publicity.[8] The program uses a cooperative-learning workshop model to teach calculus, a course that has traditionally presented a major barrier to the retention of students in science and engineering programs. The workshop participants earn an average grade that is essentially the same as that earned by all students enrolled in calculus. In some years the workshop participants exceeded the course average. Furthermore, they typically earn between three-quarters of a grade and a full grade higher than other minority students in comparison groups who have similar SAT math scores. Indeed, the average grade (2.2) of workshop participants with the *lowest* SAT scores (200-460) is higher than the average grade (2.0) of nonparticipating minority students with the *highest* SAT scores (550-800). Retention rates are also considerably higher for the workshop participants than for comparison groups. For example, 44% of the black students who took part in the workshops graduated from Berkeley in math-based majors, compared to 10% of the black students who did not participate in the workshops.

Raymond Landis of California State University, Los Angeles, has developed a similar program for engineering students.[9] The program emphasizes cooperative learning and community building and has also produced dramatic gains in student learning and retention in engineering. Not only are the retention rates for minority freshmen who participated in the Minority Engineering Program (MEP) higher than those of minority students who were not in the MEP, but they are also higher than those of the student body as a whole.

## FINANCIAL RESOURCES AND INSTITUTIONAL PRIORITIES

The priorities set by government and by institutions of higher education have important effects on the access of minorities to science and engineering education. While these decisions affect the student population as a whole, minorities are particularly vulnerable to changes in public policies or institutional priorities. Indeed, three interrelated factors affect student participation and retention in science and engineering education: 1) the costs of attending college and graduate school, 2) the polarization of higher education, and 3) the choices that colleges and universities make with respect to allocation of their own resources, both financial and human.

## COSTS: UNDERGRADUATE

Financial considerations play a crucial role in the size of minority enrollments in undergraduate education, and they can in turn be expected to affect rates of entrance to and retention in science and engineering programs. Indeed, there has been a recent decline in total college participation rates among minority young people.[10] Between 1976 and 1988, the participation rate for low-income black high school graduates dropped from 39.8% to 30.3%, while the rate for middle-income black students declined from

TABLE 3.
**Recipients of Doctorates in Science and Engineering By Field and Racial/Ethnic Group: 1978 and 1988**

| Field | Total, U.S. Citizens And Permanent Residents | | White | | Black | | Asian | | Native American | | Hispanic | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1978 | 1988 | 1978 | 1988 | 1978 | 1988 | 1978 | 1988 | 1978 | 1988 | 1978 | 1988 |
| Physical sciences | 2,161 | 2,231 | 1,750 | 1,922 | 37 | 33 | 179 | 137 | 4 | 6 | 20 | 62 |
| Mathematical sciences | 666 | 384 | 563 | 331 | 13 | 3 | 43 | 33 | 1 | 2 | 5 | 4 |
| Computer sciences | 90 | 326 | 77 | 265 | 0 | 2 | 4 | 44 | 0 | 1 | 0 | 2 |
| Earth, atmospheric, and marine sciences | 540 | 537 | 466 | 495 | 4 | 3 | 25 | 15 | 0 | 2 | 5 | 8 |
| Life sciences | 3,707 | 3,920 | 3,188 | 3,472 | 66 | 68 | 188 | 200 | 7 | 12 | 39 | 97 |
| Psychology | 2,858 | 2,700 | 2,524 | 2,421 | 100 | 100 | 28 | 47 | 3 | 7 | 51 | 93 |
| Social sciences | 2,448 | 1,700 | 2,076 | 1,436 | 76 | 66 | 87 | 90 | 4 | 9 | 47 | 57 |
| Engineering | 1,586 | 2,144 | 1,169 | 1,651 | 13 | 31 | 272 | 332 | 2 | 4 | 32 | 63 |

Source: *Women and Minorities in Science and Engineering* (Washington, D.C.: National Science Foundation, January 1990), pp. 151-54.

Along with decreases in the real value of student grants, there has been a shift in emphasis from grants to loans.

52.7% to 36.2%. The corresponding declines for low-income Hispanic students were from 50.4% to 35.3% – and for middle-income Hispanic students, from 53.4% to 46.4%.

Although the number of minority students receiving bachelor's degrees in engineering and computer science has increased, the overall trends in college participation rates could have serious implications for any future gains in science and engineering fields. It is counterintuitive to expect that the declining participation of minorities in undergraduate education will be "compensated for" by increased rates of enrollment in science and engineering. It is more likely that the overall trend will soon be reflected in declining undergraduate and graduate enrollments of minorities in science and engineering.

There are a number of reasons for the low undergraduate participation rates of minorities. Clearly, many minority youths come from low-income families, grew up in high-crime areas, and attended poor schools.[11] Nonetheless, a major factor contributing to the overall decline is the increasing cost of higher education, which threatens minority representation in all fields, but especially in science and engineering.

Tuition costs have outpaced inflation. There have been decreases in the real value of student financial aid as government grants have declined as a percentage of the total cost of education.[12] These trends, which affect educational choices for low- and middle-income students, have had unintended consequences for minority enrollment in higher education. These are the very groups whose real after-tax income has declined or failed to keep pace with the gains posted by those in higher-income groups. Moreover, colleges increasingly set their tuition rates based on the applications of upper-middle and high-income students, whose families have had recent and substantial after-tax benefits. Under these circumstances, many minority youths cannot attend college at all. Others may choose lower-cost colleges or two-year rather than four-year colleges. And many minority youths do not have an opportunity to attend many of the institutions that specialize in science and engineering education.

A recent study by the National Academy of Sciences concluded that the reduction in the real value of financial aid was the major factor contributing to the decline in college enrollments for blacks after the large upswing in enrollments in the 1970s, which was fueled in part by increases in financial aid. The enrollment decline has occurred even though high school graduation rates and average test scores for minority students have risen.[13] This study also noted that increases in military enlistments might have contributed to an enrollment decline (which has been especially severe for black men), but it concluded that possible interactions between military enlistment and college enrollment decisions are not clear.

Under the circumstances, the enrollment decline among minorities is not surprising. It is estimated that almost one-third of low-income students of all racial and ethnic groups would drop out of school if grants were eliminated.[14] Indeed, a recent study found that students were taking longer to complete their undergraduate degrees – or were dropping out – in part because they could not afford to meet their college expenses.[15] While minorities had the lowest college completion rates, the study found lower dropout rates for students who received grants. Ninety-three percent of both whites and blacks who received grants to attend private colleges were still enrolled after their first year, compared with 77% of white students and 66% of black students who received no grants.

Along with decreases in the real value of student grants, there has been a shift in emphasis from grants to loans. In 1985 almost half of all federal student aid was in the form of loans, up from only 17% in 1975. As one analyst put it, "In a single decade, loan programs intended originally for the convenience of the middle class have become the major funding mechanism helping needy students gain access to college. Recent estimates show that half of all undergraduates will finish their college careers with some debt."[16]

The increased reliance on loans has been especially troublesome for minorities. Understandably, debt burdens have been found to have a greater impact on the college attendance rates of minorities than on those of whites because of the continued discrepancies between minorities and whites in expected earnings and because of the large differences in the income and wealth of their families.[17]

## COSTS: GRADUATE

It is not surprising that graduate school enrollments for U.S. citizens in some fields of science and engineering have been relatively low. For instance, there is little financial incentive for young engineers, who are paid well by industry, to enroll in costly doctoral programs and to accept lower-paid positions in universities.[18] Graduate programs in science and engineering have also felt increased competition in recent years from such fields as business and law.

The relatively long time required to obtain a doctorate in some fields of science and engineering results in unnecessary costs and delays the entrance of students into the science and engineering workforce.[19] The time needed to earn a doctorate serves as a disincentive to students who might otherwise choose science and engineering, attend graduate school, and complete a doctorate. The average time for completing a doctorate in all fields is about 6.9 years, up from 5.5 years in the 1960s. Engineering doctorates at 5.8 years and doctorates in the physical sciences at 6.0 years, while below the average for all doctorates, clearly entail an investment of time and money that many potential graduate students do not find productive.

In addition, reductions in federal support for graduate fellowships and traineeships during the past 20 years have contributed to lower enrollments in science and engineering among U.S. students.[20] However, the reductions in fellowships and traineeships have been partially offset by increases in federally supported research assistantships and by federal fellowship programs for minority students, e.g., the National Science Foundation's

Minority Graduate Fellowships Program.

The lower average family income and lower expected earnings of minorities make it especially difficult for them to consider graduate school. Under the circumstances, the size of the debt incurred during undergraduate school is more likely to deter minority students from attending graduate school than to deter the general student population.[21]

Minority students are also less likely to receive research assistantships, which – in addition to the financial implications – means that they are less likely to gain the experience of being part of a research group that might encourage them to continue in science and engineering fields and to serve as faculty role models and mentors for the next generation of students.[22] Table 4 shows the serious underrepresentation of minority doctoral faculty members in four-year colleges and universities.

## THE POLARIZATION OF HIGHER EDUCATION

Along with financial pressures for students to choose less expensive institutions, colleges and universities also have pressures to choose students who can afford to pay. Many institutions actively recruit minority students who are "superstars," but well-qualified students from families just entering the middle class may be eligible neither for recruitment nor for financial aid. Indeed, changes in eligibility requirements mean that large numbers of middle-income families are no longer eligible for federal grants.[23] For instance, in 1980 families with incomes under $32,500 in 1980 dollars were eligible for Pell grants. In 1986 that $32,500 income would have been worth just over $41,000 in 1986 dollars, yet the ceiling for eligibility for Pell grants was reduced to $28,500. The irony is that, as more minorities enter the middle class, they are being squeezed from two directions, as financial aid packages disappear and as colleges and universities seek increasing numbers of students from quite affluent families.

A study by Lionel Lewis and Paul Kingston documents the fact that the increasing cost of higher education in the 1980s has increased the homogeneity of the student body in highly selective private institutions.[24] Although the student body remains more diverse than it was 20 years ago, these institutions are enrolling an increasing proportion of high-income students. Between 1980 and 1986 the proportion of students with family incomes above $100,000 increased from 10% to 25% – a large increase in a few years that is only partially explained by inflation or real growth in family income.

The proportion of middle-income students (defined as students from families with annual incomes between $35,000 and $49,999) enrolled in highly selective institutions is small; that proportion fell from 4.5% in 1980 to 2.5% in 1986, again a reduction only partially accounted for by inflation. As that trend continues, minority students from low- and middle-income families will find it increasingly difficult to afford to attend many of the institutions that have been especially effective in encouraging students' interest in science and engineering.

Lewis and Kingston conclude:

> Although the evidence that middle-income students have "traded down" because of a new inability to pay for an expensive selective college or university is still mostly anecdotal, public encouragement for increasing opportunities for the less economically privileged at these institutions appears to have waned. . . . Little suggests that as matters now stand the public interest is being served.[25]

At the same time that the highly selective institutions are enrolling a larger proportion of high-income students, the low-income and minority students are increasingly attending community colleges. While some states have developed "articulation" programs between two- and four-year colleges, the overall proportion of community college students who obtain bachelor's degrees has been decreasing.[26] It is estimated that only 10% to 15% of all community college students and only 20% to 25% of those who intend to transfer to a four-year institution actually go on to receive bachelor's degrees. Moreover, black, Hispanic, and Native American students are less likely to transfer than are white or Asian-American students.

The issue is not whether community colleges serve an important function. Clearly, many students are helped to make the transition to four-year colleges, and many others receive vocational/technical training that would otherwise not be available. The concern is for the students who attend community colleges only be-

TABLE 4.

**Doctoral Scientists and Engineers on the Faculties of Four-Year Colleges and Universities, by Field and Racial/Ethnic Group: 1987**

| Field | Total* | White | Black | Asian | Native American | Hispanic |
|---|---|---|---|---|---|---|
| Physical sciences | 28,700 | 25,700 | 300 | 2,600 | 100 | 500 |
| Mathematical sciences | 13,000 | 11,600 | 100 | 1,200 | ** | 200 |
| Computer sciences | 5,400 | 4,900 | ** | 500 | ** | 100 |
| Environmental sciences | 7,400 | 6,900 | 100 | 400 | ** | 100 |
| Life sciences | 64,700 | 58,200 | 1,000 | 5,000 | 100 | 1,000 |
| Psychology | 22,000 | 20,700 | 600 | 400 | ** | 300 |
| Social sciences | 44,400 | 40,200 | 1,300 | 2,400 | 100 | 800 |
| Engineering | 23,600 | 19,600 | 300 | 3,600 | ** | 400 |

Source: *Women and Minorities in Science and Engineering* (Washington, D.C.: National Science Foundation, January 1990), pp. 107-8.

*Rows do not add to total because racial/ethnic categories are not mutually exclusive and because total includes "other" and "no report."

**Too few cases to estimate.

cause of financial considerations and who therefore have significantly reduced their chances of obtaining a degree in science or engineering.

A recent study concludes that the net effect of community colleges has been to increase the separation of elite and non-elite institutions in the U.S. and of the students who attend them:

> The very real contribution that the community college has made to the expansion of opportunities for some individuals does not, however, mean that its aggregate effect has been a democratizing one. On the contrary, the two-year institution has accentuated rather than reduced existing patterns of social inequality. Indeed, in both the social origins and the occupational destinations of its students, the community college clearly constitutes the bottom tier of a class-linked tracking system in higher education. As a growing body of evidence accumulated over more than two decades demonstrates, the very fact of attending a two-year rather than a four-year institution lowers the likelihood that a student will obtain a bachelor's degree. Similarly, entering a two-year as opposed to a four-year college has a negative effect on adult occupational status, even controlling for individual differences in socioeconomic background, measured mental ability, and other variables.
>
> To be sure, the growth of community colleges has brought some individuals into higher education who would otherwise never have attended college; at the same time, however, this growth has also meant a diversion to the two-year sector of large numbers of students – disproportionately of modest social backgrounds – who would otherwise have attended four-year institutions. Finally, a fundamental (and by no means entirely unintended) effect of the rapid extension of community colleges has been to enable public four-year colleges and universities to tighten their admissions requirements and thereby to exclude on meritocratic grounds many students who, in the absence of community colleges, might have felt entitled to a place in the freshman class of what are, after all, public institutions.[27]

## INSTITUTIONAL CHOICES

The decisions an institution makes about tradeoffs between such competing priorities as research, undergraduate teaching, programs abroad, and the renovation of aging facilities affect costs as well as students' educational experiences. These experiences in turn can be expected to influence academic achievement, persistence in science and engineering programs, and occupational and graduate school choices.

There is a growing body of evidence that the undergraduate environment of colleges and universities, especially the time faculty members spend teaching and advising students, plays an important role in student achievement and retention in science and engineering programs.[28] Mentoring by faculty members has been found to be an important factor in keeping minority students in science and engineering fields. Indeed, one purpose of the minority science and engineering programs described above is to create a supportive environment for students within the current structure of colleges and universities.

The financial pressures and the emphasis on research have driven many institutions away from a focus on undergraduate education. Faculty members often have little time for teaching and mentoring undergraduate students or for involving them in research. Freshman and sophomore science and engineering courses, which are most likely to influence students' decisions about continuing in these fields, are increasingly taught in large classes or by graduate assistants. As one faculty member put it, "Students are the weeds in the garden of academia."

Stephen Joel Trachtenberg, president of George Washington University, describes the disincentives for undergraduate teaching and their impact on the costs of higher education:

> [W]hat the American public itself has done is to lay down the rule that the pacesetters in higher education are the world-class *research* universities where the rules are that the higher you rank as a faculty member the less you teach; and that the more you charge as a school the better you are. . . .
>
> [T]he nationally established pecking order for the universities you'd like your son or daughter to attend has also resulted in a pecking order that prevails *within* those universities. With very occasional exceptions, the more a faculty member is exposed to students and to classroom teaching, the lower that faculty member's standing within his or her academic peer group.
>
> Among those faculty members who do, unfortunately, have to teach in order to receive their paychecks, additional hierarchical distinctions prevail. Those who teach graduate students and an undergraduate senior-level honors seminar rank higher than those who teach *only* junior- and senior-level undergraduates. The latter, in turn, rank higher than those who teach sophomore-level introductory courses in their academic specialties. And those poor souls, in turn, occupy an Olympus that towers far above the plains of drudgery where teaching assistants hand out the basics on how to write decent English and how to understand the cultural and historical foundations of our society.
>
> For faculty members who have internalized these standards, getting released time from teaching and teaching as little as one can possibly manage have taken on the value once associated with the Quest for the Holy Grail. . . .
>
> And requests like that are by no means confined to the faculties of the major research universities. They've made their way down to the four-year colleges and are probably scoring inroads at the two-year colleges as well.[29]

Given the financial pressures faced by colleges and universities, occasioned in part by their attempt to serve so many constituencies in and outside the academic community, these trends should not be unexpected. Even elite institutions have difficulty sustaining costly advanced research programs along with strong undergraduate liberal arts programs. As expenses exceed revenues, higher education institutions are under increasing pressure to raise grant money – pressure only in part related to the merits of conducting research and attracting top-flight faculty members. For many institutions, the "indirect cost" component of grants has become a necessary prop to help support overall operating expenses. Colleges and universities also face growing pressure to raise private funds; however, legal restrictions prevent the use of most endowments for operating expenses, and donors, especially corporations, are increasingly earmarking their gifts for programs other than the liberal arts.

There are a number of reasons why the costs of higher education have outpaced the rate of inflation: a growing number of "exotic" programs across a wide range of academic and nonacademic areas, technological advances that have increased the costs of undergraduate education and of research, and increased institutional contributions to student financial aid (although these contributions cannot begin to compensate for the declines in the

real value of government assistance).[30] These factors make it increasingly difficult for institutions to give high priority to undergraduate education.

The comments above are not meant to detract from the important role that research plays in U.S. higher education. It is generally acknowledged that no other nation can match the range and quality of research opportunities offered by U.S. colleges and universities. As Jean-Jacques Servan-Schreiber and Herbert Simon of Carnegie Mellon University put it, "For the first time in modern history, one country seems to serve, in the advanced sciences, as the university of the world."[31] However, there is a need for caution about the growing pressures for faculty members to conduct research and for undergraduate colleges to shift from their traditional teaching role to a greater emphasis on research. These choices have implications for the costs that society – and families – must bear and for the quality of undergraduate education. They have especially important consequences for the participation and retention of minority students in science and engineering.

The resource and policy trends addressed here play a significant role in the participation of minorities in science and engineering education. While there are a number of effective programs and while there have been recent gains in minority participation in some fields of science and engineering, the situation remains fragile. At a time when increasing numbers of minority young people might wish to seek an education in science and engineering, the negative trends with respect to financial resources and institutional priorities have created unintended barriers to the continuing progress of minorities in science and engineering, and these trends threaten to overshadow potential gains and effective programs. These trends, which affect the entire student population, are particularly troublesome for minorities – and even more so for those who are interested in entering science and engineering.

The result is a personal hardship for the students involved and a loss of technical skills to the nation as a whole at a time when U.S. competitiveness in the international marketplace increasingly depends on a highly skilled labor force. Indeed, because educational attainment is highly correlated with the level of parental education, our educational losses are not simply "one-time" misfortunes for this generation of young people – or for the society at large. They have enduring implications for future generations.[32]

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*"And when my son didn't get first prize at the science fair, the judge mysteriously disappeared."*

# Viewing the Now-Distant Past: How Faculty Members Feel When The Reward Structure Changes

*The usual winner in the race for the deanship is the one who poses the rather silly challenge of making Plainview State another Stanford, Mr. Soder points out. Many faculty members tend to feel left out, ignored, stepped on, stepped over, treated with contempt – sentiments hardly conducive to good preparation of teachers!*

BY ROGER SODER

IN "Theory," Wallace Stevens reminds us that "one is not duchess a hundred yards from a carriage." And in practice, one is not a professor outside of an institution of higher education. In practice, if we are to understand and ascribe meaning to the work and life of faculty members in schools, colleges, and departments of education – a group of central concern in the Study of the Education of Educators (SEE) – we must be acutely aware of the institutional structures and expectations that influence the work and life of faculty members. In designing the SEE, we focused particular attention on three areas of structures and expectations: 1) what faculty members say their institutions *do* and what they *should do*, 2) what faculty members say they themselves *do* and what they *should do*, and 3) what faculty members say their rewards for work *are* and what they *should be*.

Two related objectives compel our continuing investigation of these three topics.

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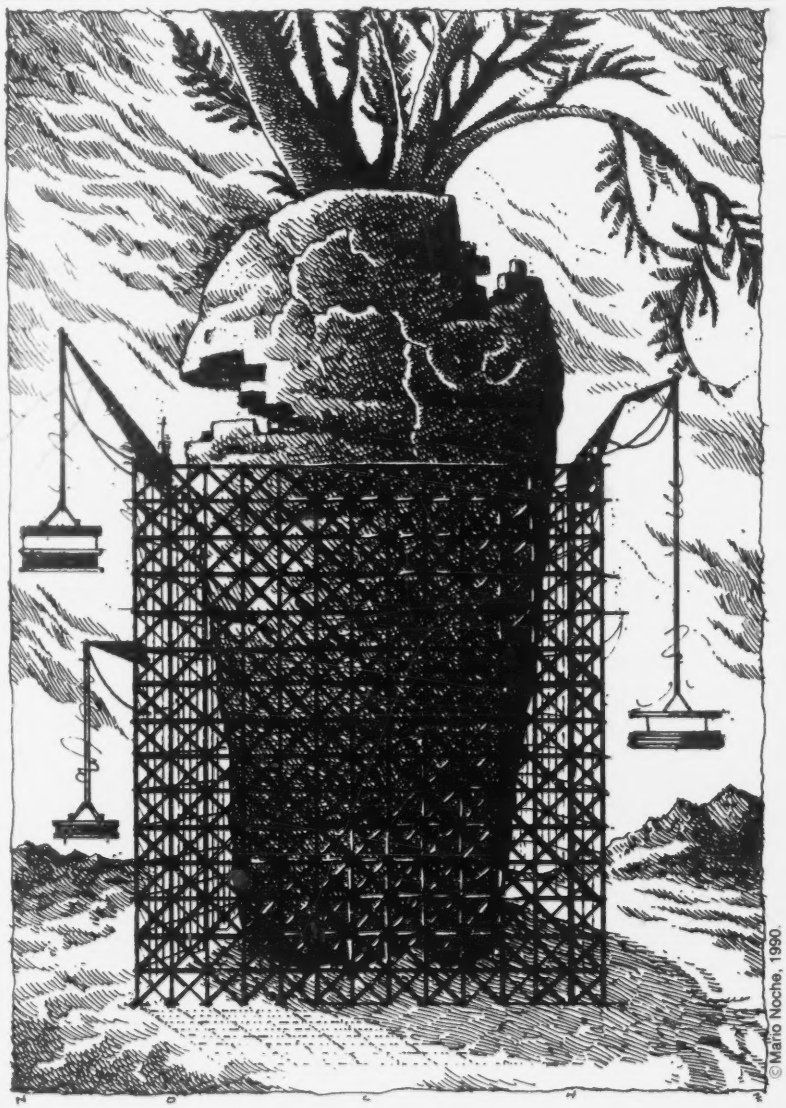

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*Illustration by Mario Noche*

First, the faculty is a key element in understanding the enterprise of preparing educators. Accordingly, we must pay attention to the perceptions and preferences of faculty members in order to understand the whole. Second, the SEE will not end with the publication of findings and recommendations. A long-range goal of the study is the actual adoption and testing of those recommendations – recommendations that we anticipated early on would be fundamental to the enterprise of preparing educators in both a philosophical and a structural sense. It became equally clear early on that we must pay attention to what it means to be a faculty member in the context of the institution if we are going to identify the changes needed in that context to put in place our fundamental and far-reaching recommendations.

In short, we are contemplating an attempt at what might be seen as a kind of cultural dispersion, and so we must deal with the realities with which such attempts are always confronted. As William McNeill suggests, "When a group of men encounter a commodity, technique, or idea that seems superior to what they previously had known, they will try to acquire and make their own whatever they perceive to be superior, but only as this does not seem to endanger other values they hold dear."[1]

Clearly, we must understand the values held dear by university faculty members if we are to develop an effective rhetoric and if our claims are to be accepted. Such understanding, in turn, is related to a critical decision about the reform strategy on which the rhetoric is to be predicated: namely, the determination of which faculty and institutional traits to retain and which to replace. Albert Hirschman has outlined the importance of this decision with regard to underdeveloped countries. Instituting a project in an underdeveloped country, he argues, implies

> (1) a decision to accept some status quo traits as temporarily unchangeable characteristics of the environment that will mould the project, and (2) a decision to consider others as subject to and ready for the kind of changes that are required for making a success of the project.
>
> The project may therefore be said to act at the same time as "trait-taker" and as "trait-maker": the decision which traits to "take," that is, accept (because they are considered unchangeable), and which ones to make (by changing existing or creating new traits) is crucial to project design and success.[2]

What Hirschman so perceptively notes about development projects elsewhere holds equally true for what is, in effect, our own development project. We, too, are involved in trait-taking and trait-making. In the early stages of development, we must bring data and analysis to bear on decisions about which faculty and institutional traits or attributes to accept as given and which to modify or make over if we are to have a coherent strategy.

These are difficult decisions. A large part of the difficulty derives from the particular traits under consideration. We are talking, after all, of matters that go to the core: what it means to be a faculty member and, inevitably, what it means to live one's life. To say that one's work should or should not be thus and so is to say a great deal. Most of us define our sense of identity in large part in terms of our work; we confuse what we *do* with what we *are*. Thus when work fails us (through unemployment, boredom, burnout, or what we see as the venal actions of others), we have no center – nothing to fall back on. To say, in effect, "I am my work" is easy – perhaps habitual – and with that ease, I forget that I am also a son, husband, father, uncle, friend, and human being. To talk of work, then, is a dangerous business. And it is most assuredly dangerous when (as we shall see) one's ability to find new work is severely constrained.

We need to move with some care. Despite what some might see as harsh caricature and caustic criticism in the following pages, I have in fact approached these matters of faculty members' feelings and values with trepidation and, I hope, respect. There are, of course, many faculty members who do not much fit any of the characterizations herein; my intent has been to delineate what appear to be predominant, recurring, and important traits in a goodly portion of faculty members and institutions.

Data pertaining to these traits were obtained through questionnaires and interviews. A faculty questionnaire included 10 items dealing with various aspects of faculty work in its institutional context.[3] One item focused on the extent of current and desired activities, such as publishing in practice-oriented journals, publishing in research-oriented journals, and providing services as a paid consultant. Another item asked for the actual and desired percentage of time allocated to four areas: teaching, research, administrative/committee work, and professional service.

The remaining eight items focused on nine institutional missions or areas of emphasis: teaching, research, development, ad hoc services, effecting change, preparing teachers, preparing special educators, preparing administrators, and preparing researchers. We asked faculty members to indicate:

- the perceived importance of these missions to their institutions now and in the future;
- the respondents' own perspectives regarding the importance of the missions now and in the future;
- the extent of the respondents' current and future involvement in the missions;
- the reasons for the respondents' lack of involvement in missions dealing with educator preparation;
- the major source of colleagueship in pursuing activities related to the missions;
- the extent of support for faculty members in pursuing the missions;
- the weight that institutions place on the missions when considering faculty members for promotion and tenure; and
- the weight that respondents desired their institutions to place on the missions when considering faculty members for promotion and tenure.

Interviews with faculty members and academic administrators also included several questions dealing with institutional missions and faculty work. Interviewees were asked to comment on the reward structure in universities and on what it takes to get tenure and to earn a promotion. We asked them to indicate whether the reward structure had changed and, if they thought it had, the direction of that change and the rationale put forth to explain it. We also asked them to comment on the extent to which the education unit and the university were experiencing a shift in mission or emphasis.

In what follows, I discuss some of the findings from the questionnaires and interviews. It should be noted that in this article I will present only selected data for illustrative purposes; I have treated the data more fully elsewhere.[4]

## QUESTIONNAIRE DATA

*Institutional mission.* Respondents were asked to indicate their perceptions of the current importance placed on the nine

*Across institutional types, teaching is desired as the first priority; preparing teachers is desired as the second.*

posited institutional missions by their respective schools, colleges, and departments of education. They were also asked to indicate how important they felt each mission *should* be at their institutions. The four categories of importance were "not at all," "marginally," "moderately," and "centrally." Responses were analyzed by institutional type (three types of public institutions: "flagship" or research institutions, major comprehensive institutions, and regional comprehensive institutions; and three types of private institutions: major, regional, and four-year liberal arts institutions).[5]

Responses for institutional missions perceived and desired as "centrally important" are shown in Table 1.

In terms of perceptions of current importance, these data suggest that faculty members in flagship public universities are much more likely to perceive their institutions as focusing on research and the preparation of researchers than on the other posited missions. Also, those in flagship public universities are less likely than their colleagues in other types of institutions to perceive the remaining missions as centrally important to their institutions.

Faculty members in major public universities put their institutions' priorities in slightly different order, and the rankings are more evenly distributed. We observe that preparing teachers has the highest rank (59.8%), followed by teaching (49.1%), research (43.9%,) and preparing administrators (42.9%). Among those in regional public universities, preparing teachers has the highest rank (78.2%), followed by teaching (73.9%) and preparing special educators (53.8%). Among those in major private institutions and regional private institutions, the priorities show a similar pattern, with the exception of research. As we might expect, those in major private institutions see a high priority placed on research. Those in private liberal arts colleges, on the other hand, perceive their institutions as focusing first on teaching (81.6%), followed closely by preparing teachers (77.8%), with research a distant third (34.8%).

Examining the data in Table 1 in terms of faculty members' desired priorities for their institutions, we note that those in flagship public universities want the highest priority to be placed on teaching, followed by preparing teachers, research, and preparing researchers. For those in major public universities, the order shifts somewhat, with teaching still ranked first, but followed by preparing teachers, effecting change in public schools, and research. Those in regional public universities desire the highest priority to be placed on teaching, followed by preparing teachers, preparing special educators, and effecting change.

For those in major private institutions, the priorities took the order of teaching, preparing teachers, research, and effecting change. Those in regional private institutions desire the highest priority to be placed on teaching, followed by preparing teachers, effecting change, and preparing administrators. Finally, for those in private liberal arts colleges, teaching and preparing teachers have the highest desired priorities, followed by effecting change and research.

Without exception across institutional types, the first and second desired priorities are the same: teaching is desired as

TABLE 1.
**Missions Perceived and Desired as Centrally Important, by Institutional Type**

| Mission | | Flagship Public % | Major Public % | Regional Public % | Major Private % | Regional Private % | Lib. Arts Private % |
|---|---|---|---|---|---|---|---|
| Teaching | Perceived | 28.9 | 49.1 | 73.9 | 71.8 | 76.0 | 81.6 |
| | Desired | 76.2 | 80.0 | 91.8 | 94.9 | 93.3 | 95.7 |
| Research | Perceived | 81.3 | 43.9 | 23.6 | 52.6 | 32.7 | 34.8 |
| | Desired | 60.8 | 52.7 | 32.0 | 62.8 | 41.3 | 26.1 |
| Development | Perceived | 8.5 | 16.4 | 18.0 | 7.9 | 28.2 | 6.7 |
| | Desired | 36.2 | 37.9 | 39.0 | 25.0 | 41.7 | 15.6 |
| Ad hoc services | Perceived | 7.0 | 20.5 | 16.7 | 13.2 | 22.1 | 4.4 |
| | Desired | 25.1 | 36.3 | 37.6 | 24.0 | 35.0 | 8.9 |
| Effecting change | Perceived | 12.0 | 22.4 | 21.0 | 30.3 | 36.9 | 15.6 |
| | Desired | 50.0 | 57.1 | 54.1 | 61.8 | 58.3 | 37.8 |
| Preparing teachers | Perceived | 38.6 | 59.8 | 78.2 | 71.6 | 72.7 | 77.8 |
| | Desired | 66.7 | 75.6 | 86.7 | 82.4 | 83.5 | 89.1 |
| Preparing special educators | Perceived | 15.1 | 33.9 | 53.8 | 36.8 | 30.1 | 4.3 |
| | Desired | 33.5 | 44.6 | 58.8 | 41.9 | 43.6 | 17.8 |
| Preparing administrators | Perceived | 19.5 | 42.9 | 39.5 | 36.8 | 43.7 | 20.0 |
| | Desired | 37.8 | 48.8 | 43.1 | 42.7 | 51.0 | 21.7 |
| Preparing researchers | Perceived | 47.9 | 16.4 | 8.2 | 22.7 | 5.8 | 6.8 |
| | Desired | 56.0 | 47.3 | 21.6 | 46.1 | 13.7 | 15.9 |

the first priority; preparing teachers is desired as the second priority.

Table 1 reveals varying degrees of discrepancy between the perceived and the desired priorities given to each mission. For example, 28.9% of those in flagship public universities perceive teaching as centrally important, while 76.2% desire teaching to be centrally important. Among those in major public universities, the discrepancy between the perceived and the desired importance given to teaching is considerable as well. The discrepancies between the perceived and the desired primacy of the teaching mission are considerably smaller for the other institutional types.

For most of the missions across institutional type, the percentage desiring a mission to be emphasized is larger than the percentage perceiving it to be emphasized. There are two exceptions to this pattern. Of those in flagship public universities, 81.3% perceive research as centrally important, while only 60.8% desire research to be central. Of those in private liberal arts colleges, 34.8% perceive research as centrally important in their institutions, while only 26.1% desire it to be centrally important.

*Tenure.* Respondents were asked to indicate their perception of the weight given in tenure decisions to participation by faculty members in each of the nine posited missions. We also asked them to indicate the weights they desired their institutions to give to each mission. There were four response categories: "not considered," "marginally helpful," "moderately helpful," and "essential." Responses for the missions considered to be "essential" for tenure decisions are presented in Table 2.

We observe patterns in Table 2 that are similar to those in Table 1. For example, only 17% of those in flagship public universities perceive teaching as essential for tenure, while 77.6% desire it to be. Similar discrepancies with regard to teaching are noted for major public universities (40.4% perceived versus 80.1% desired) and major private institutions (25.4% perceived versus 84% desired).

Participation in relatively few of the institutional missions is perceived as currently essential for tenure. Teaching and research are the two missions seen to be essential for tenure. Note, too, that across all institutional types respondents indicate a desire for research to be less important as a criterion for tenure than it currently is. For example, 92.8% of those in flagship public universities perceive research as currently essential for tenure, but only 58.6% indicate that they would prefer research to be essential for tenure.

*Missions that are essential for tenure.* So far our comparisons have dealt with perceptions of the current importance of missions versus the desired importance.

*Participation in relatively few of the institutional missions is perceived as currently essential for tenure.*

And there are considerable discrepancies between what faculty members see as the current state of affairs and what they would like to see. Yet another comparison is worthy of note: the percentage of respondents who indicate that a mission is seen by their institution as "centrally important" can be usefully compared with the percentage who indicate that participation in that mission is "essential" for tenure. These data are reassembled from the previous two tables and presented in Table 3.

At major private institutions 71.8% of the faculty members perceive teaching to

TABLE 2.
**Missions Perceived and Desired as Essential for Tenure, by Institutional Type**

| Mission | | Flagship Public % | Major Public % | Regional Public % | Major Private % | Regional Private % | Lib. Arts Private % |
|---|---|---|---|---|---|---|---|
| Teaching | Perceived | 17.0 | 40.4 | 60.0 | 25.4 | 74.7 | 69.2 |
| | Desired | 77.6 | 80.1 | 89.7 | 84.0 | 81.2 | 93.2 |
| Research | Perceived | 92.8 | 72.6 | 52.2 | 91.5 | 58.6 | 74.7 |
| | Desired | 58.6 | 58.6 | 29.7 | 56.6 | 40.6 | 23.3 |
| Development | Perceived | 6.9 | 7.1 | 11.1 | 10.9 | 9.1 | 12.5 |
| | Desired | 21.6 | 17.4 | 23.8 | 22.9 | 23.5 | 11.6 |
| Ad hoc services | Perceived | 2.7 | 8.8 | 10.3 | 4.5 | 11.4 | 0.0 |
| | Desired | 10.4 | 23.3 | 21.6 | 17.6 | 20.0 | 9.1 |
| Effecting change | Perceived | 2.9 | 2.2 | 4.5 | 4.7 | 7.9 | 0.0 |
| | Desired | 25.9 | 27.2 | 25.3 | 27.6 | 25.0 | 9.1 |
| Preparing teachers | Perceived | 7.4 | 14.8 | 32.8 | 11.9 | 39.2 | 26.3 |
| | Desired | 45.8 | 46.0 | 58.7 | 43.2 | 60.8 | 67.4 |
| Preparing special educators | Perceived | 4.9 | 14.1 | 26.3 | 11.8 | 23.1 | 0.0 |
| | Desired | 21.8 | 26.5 | 36.8 | 24.3 | 33.0 | 4.8 |
| Preparing administrators | Perceived | 3.5 | 14.9 | 19.3 | 10.7 | 33.3 | 0.0 |
| | Desired | 20.5 | 28.4 | 25.8 | 28.8 | 34.4 | 14.3 |
| Preparing researchers | Perceived | 29.2 | 12.7 | 8.2 | 18.8 | 10.0 | 10.0 |
| | Desired | 40.3 | 31.9 | 15.9 | 34.7 | 11.6 | 7.0 |

TABLE 3.
## Missions Perceived as Centrally Important and As Essential for Tenure, by Institutional Type

| Mission | | Flagship Public % | Major Public % | Regional Public % | Major Private % | Regional Private % | Lib. Arts Private % |
|---|---|---|---|---|---|---|---|
| Teaching | Centrally important | 28.9 | 49.1 | 73.9 | 71.8 | 76.0 | 81.6 |
| | Essential for tenure | 17.0 | 40.4 | 60.0 | 25.4 | 74.7 | 69.2 |
| Research | Centrally important | 81.3 | 43.9 | 23.6 | 52.6 | 32.7 | 34.8 |
| | Essential for tenure | 92.8 | 72.6 | 52.2 | 91.5 | 58.6 | 74.7 |
| Development | Centrally important | 8.5 | 16.4 | 18.0 | 7.9 | 28.2 | 6.7 |
| | Essential for tenure | 6.9 | 7.1 | 11.1 | 10.9 | 9.1 | 12.5 |
| Ad hoc services | Centrally important | 7.0 | 20.5 | 16.7 | 13.2 | 22.1 | 4.4 |
| | Essential for tenure | 2.7 | 8.8 | 10.3 | 4.5 | 11.4 | 0.0 |
| Effecting change | Centrally important | 12.0 | 22.4 | 21.0 | 30.3 | 36.9 | 15.6 |
| | Essential for tenure | 2.9 | 2.2 | 4.5 | 4.7 | 7.9 | 0.0 |
| Preparing teachers | Centrally important | 38.6 | 59.8 | 78.2 | 71.6 | 72.7 | 77.8 |
| | Essential for tenure | 7.4 | 14.8 | 32.8 | 11.9 | 39.2 | 26.3 |
| Preparing special educators | Centrally important | 15.1 | 33.9 | 53.8 | 36.8 | 30.1 | 4.3 |
| | Essential for tenure | 4.9 | 14.1 | 26.3 | 11.8 | 23.1 | 0.0 |
| Preparing administrators | Centrally important | 19.5 | 42.9 | 39.5 | 36.8 | 43.7 | 20.0 |
| | Essential for tenure | 3.5 | 14.9 | 19.3 | 10.7 | 33.3 | 0.0 |
| Preparing researchers | Centrally important | 47.9 | 16.4 | 8.2 | 22.7 | 5.8 | 6.8 |
| | Essential for tenure | 29.2 | 12.7 | 8.2 | 18.8 | 10.0 | 10.0 |

be of central importance to the institution, but only 25.4% perceive it to be essential for tenure. While only 34.8% of those at private liberal arts colleges perceive research to be of central importance to their institutions, 74.7% perceive it to be essential for tenure. For those at flagship public universities, 38.6% indicate that their institutions profess the preparing of teachers to be of central importance, but only 7.4% indicate that preparing teachers is essential for tenure. At major private institutions, 71.6% say that preparing teachers is of considerable importance, but only 11.9% see preparing teachers as essential for tenure.

THE DIFFERENCES we have noted between the perceived and the desired priorities for the nine institutional missions are one sort of discrepancy. But, as the data in Table 3 suggest, there is another order of discrepancy – that between perceptions of what the institution says is important as an institutional mission and perceptions of what it says is important for tenure.[6]

Both orders of discrepancy have important implications for faculty morale. But the second order may have more impact on morale in the long run. For example, one can privately wish that one's institution emphasized teaching more than it does and emphasized research less – and still come to terms with the differences in attitudes. It may be more difficult to deal with the fact that, while one's institution claims that teaching is more important than research, research carries the day when it comes to tenure decisions. Discrepancies between one's own perceptions and desires can either be accepted, or one can try to reduce them. Discrepancies between perceptions of institutional declaration and perceptions of institutional reality bespeak institutional hypocrisy. Dealing with hypocrisy is much harder than dealing with the fact that you can't always get what you want.

### INTERVIEW DATA

Interviews with faculty members at the 29 institutions tended to confirm the discrepancies we found in the questionnaire data. I will focus here on the portions of the interviews that dealt with the institutional reward structure.

The four flagship public universities in our study have a perceived emphasis on research, on publishing in refereed journals, and on getting grants. For three of the four institutions, the current reward structure represents a change from 15 to 20 years ago. Listen to these members of the faculty tell the tale.

> Now, it's generate dollars, which will translate into research where publications will accrue. Fifteen years ago getting tenure and promotion was like high schools – letter in the mail, congratulations. Last dozen years is when the publishing and research emphasis changed. (Associate professor, agriculture, six years at current institution)
>
> * * *
>
> Research and writing are the only ways you get promoted, but it's not enough to write for the field – you have to write for your colleagues. We had a man in math ed. who didn't get promoted because he just published in teacher education magazines. The staff dwindled when enrollment dropped in the Seventies. Largely research people hired in the Eighties – they haven't been in teacher education. (Professor, English education, 26 years)

The perceived emphasis at the major public universities is also on research and publication. Some faculty members do not see this as representing much change in the reward structure:

> Absolutely publish. I don't think it's changed. Other people will say that it has. They were *told*, they say, that teaching and service were equally important, but I don't think so. Teaching is not even an evaluation category. (Associate professor, curriculum and instruction, 18 years)

Others do see changes, with negative consequences:

> We were always expected to do some scholarly work along with everything else. But not like now. Now, they've got an idea we should have a national, even international, reputation for productivity. I don't know what's going to happen after my generation retires. They place such an emphasis on research and such a low emphasis on teaching. The young faculty come here, [and] you can't blame them for wanting to do research and ignore teaching because they know they have to. Sooner or later it's going to catch up with us. Legislators are going to send their kids here, there will be nobody here to teach these kids, except teaching assistants, and *then* you'll see funding cutbacks like never before. (Professor, science education, 32 years)

For some older members of the faculty, there is a sense of being pushed aside:

> The reward structure changed from primarily teaching in 1975. I wanted to teach. The young folks don't know anything else [other than the current reward structure]. A person like me [a slight shrug of the shoulders], I'm tolerated. (Professor, math methods, 25 years)

Some regional public universities in the study are perceived as maintaining modest goals. Others are perceived as institutions in flux, moving to something more, something bigger, with attendant tensions:

> It changed just about the time I got here, to 1) publish or perish, 2) politics and the old-boy network and how well you get along with certain people, and 3) teaching, sort of. That is to say, you'd best not be a really lousy teacher. But it's publishing first and foremost. There are serious clashes as a result of this shift from the old reward structure (which was teaching plus service), and it's been tough for some of the older folks. They feel threatened by those of us who do scholarly work. There are clashes on search committees between those who are looking for researchers and scholars and those who just want to hire some good little teachers. (Associate professor, elementary education, six years)

Teaching is generally not seen as highly valued in regional public universities:

> Above all else, first, publication and scholarly work; then politics, which are incredibly important, as are personalities; third, it's necessary to be here quite a few years, and then there's social grace. Teaching and service will not have an impact on promotion, unless you are *really* crummy. Good teaching and service will be, at *best*, nonnegative. (Associate professor, math methods, six years)

Or teaching is valued in a limited sense:

> You *must* be a teacher. Student evaluations are taken quite seriously. You can talk bullshit as long as it's rated high by the students. (Professor, school psychology, 12 years)

With the changes in reward structure come changes in evaluation. Some regional public universities are using point systems:

> Now, it's publishing. Until four to five years ago, it wasn't publishing. It was teaching and committee assignments, it was an automatic promotion. Now, you can get an infinite number of points for publishing, but a finite number of points for presentations and everything else. (Associate professor, research and psychology, 12 years)
>
> * * *
>
> You want to know how it works in [my department]? Okay. If you get in [a leading journal], that's four points. [Another leading journal] is three points. A journal like [a journal oriented to applied high school teaching] is the lowest -- that gets you one point. If you're second author, only half the points. (Professor, speech communication, 18 years)
>
> * * *
>
> Publishing henceforth will be the name of the game. I keep a daily journal to keep track of what I'm doing. We'll be called on to do monthly reports. I keep two calendars, one in my bag here, one in the house for documentation. [The dean] said to us in no uncertain terms that the next merit increases and tenure and promotion would be based on research and publishing. When I came it was teaching, service, advisement, and creative activities. (Professor, education, eight years)

There is disagreement over what one should be rewarded for in the regional public universities:

> In 1969 the rewards here were centered on being a good teacher and providing service to students. In the last several years it's changed to publication, research, scholarly work, making a contribution to one's academic field. "Pure" research is emphasized. I do lots of inservice in the districts -- there's *no* reward for that. For example, I work with teachers on how to present short stories, [and some faculty members here will] say that you're just having *fun*. (Professor, speech communication, 18 years)

And, again, there are tensions:

> The reward structure is more rigid. There's more emphasis on research and publications. Our dean favors those who do research and get grants. There's a tendency to look for new people with long publication lists. Depends on who is on the selection committee. The younger faculty are really torn apart -- role demands from above versus doing a good job with preservice. The Stanford or Berkeley people who come here are much more oriented toward research. (Professor, science education, 28 years)

Where one is to find the time to meet the new expectations in regional public universities is uncertain:

> Publishing and grants are much more important. This definitely has been a change in the last 10 years. It used to be quality teaching as the norm. Now it's research, still some teaching. The teaching load is four courses a semester. No reductions. Lots of pressure. There's no support, no time to do a good job. It used to be teaching only, publications and grants were feathers in the cap. Now it's shifting and people are pissed, no help, no travel. (Associate professor, math education, eight years)

Some speak of disorientation:

> Right now, we don't know what our mission is. There are lots of people who have been here 20 to 25 years. They were elementary school teachers before that. They haven't grown. They still think they are in public school. (Professor, secondary education, 14 years)

Others say they intend to keep doing what they feel they should be doing:

> When I came here, it was teaching and community involvement. I got promoted that way. . . . Now they want

*The rules have changed for the veteran faculty member, and dealing with that change can be very painful.*

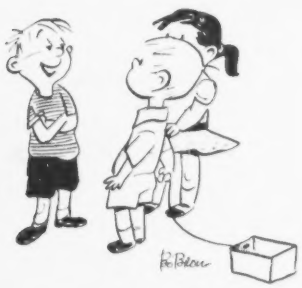
to make [research] an important item. Every time we get a new dean or vice president for academic affairs, they make a big deal about research. Sometimes it seems they would like to have everything. I'll retire as an associate professor because I won't sacrifice my teaching for research. (Associate professor, psychology, 16 years)

* * *

I'm a full professor. You can't teach an old dog new tricks, and like I said, I came here because I wanted to teach, and I was hired to teach, and that's what I'm going to continue to do. (Professor, foundations, 20 years)

Those in the three types of private institutions in the study indicated sentiments similar to those of their colleagues in public institutions. The reward structure is perceived as centering more and more on research and publication. At the major private institutions, the change in emphasis is not surprising. However, at the regional private institutions and at the private liberal arts institutions, the push toward research is more of a jolt. From a liberal arts institution comes what might be a summary of the whole:

> The reward structure is the same as everywhere, it seems. A lot of publishing is now expected, a change in the last five years. We've lost a lot of good people who came in here to teach and didn't get tenure. The administration wants to go *national*, believe it or not. They're already regional, they think, and are positioning themselves for bigger and better things. (Associate professor, counseling, six years)



*"I can spell almost all of* cat."

## CONCLUDING COMMENTARY

There is considerable unhappiness among many faculty members about their work in its institutional context. There are considerable gaps between what they say they want to do and what they say their institutions require them to do; these gaps, of course, vary by type of institution. The education faculty, as has long been established, sees itself and is seen by others as having comparatively low status.[7] When one adds to low status the discrepancies between the perception of what one is required to do and what one wishes to do, the situation of many faculty members can seem quite bleak. We are reminded of W. H. Auden's soldier patrolling Hadrian's Wall: "The rain comes pattering out of the sky / I'm a Wall soldier, I don't know why."[8]

Some may feel that our portrait of the plight of the education faculty is too gentle, too uncritical. Surely, one might argue, people in all occupations feel discrepancies between what they wish to do and what their situation dictates. Sinclair Lewis tells us that George Babbitt wanted to be governor but ended up selling real estate with his father-in-law. But there are lots of would-be governors. Or doctors. Or lawyers. I know someone who came out of law school intending to be another Clarence Darrow, fighting for the underdog. He has spent the last 25 years cranking out forms and briefs for small businesses. It happens all the time. Why should the difference between dream and reality be any more painful for education faculty members than for those in other occupations?

Let us compare the situation of our would-be Clarence Darrow with that of a hypothetical 25-year veteran of the education faculty at any one of the 29 institutions we visited. In some respects, their situations are similar. Our lawyer knows that he is not going to be another Darrow. He has come to terms with his life – as much as most of us do – and he is reasonably happy with his work. In like manner, our veteran faculty member knows he is not going to be another John Dewey, but he, too, is reasonably content with his life and his work.

Yet in one critical respect their situations are much different. Nobody is asking our lawyer to *become* Clarence Darrow after all those humdrum years of filling out forms. Nobody is saying, in effect, "If you don't start doing what Darrow did, you're all washed up, and you might as well pack it in." Nobody is changing the context of work for our lawyer. But the context of work for many faculty members in education is changing drastically, and that is the critical difference. In many of our 29 institutions, we can find veteran faculty members being confronted with the shift from a context of work focused on teaching and service to a context that primarily values research, publication, and the pursuit of extramural funding.

The rules have changed for our veteran faculty member, and dealing with that change can be very painful. For many on the education faculty, that pain is a very real part of their lives. What they did all those years, what they thought others thought of them, was pretty much settled. With the advent of new plans, new visions, a new president or provost or dean bent on turning that former normal school into Stanford before he or she leaves in three years – all of a sudden nothing is settled. The pain is made worse for many by the knowledge that there is no other place to go. The labor market for faculty members has all but collapsed, and the situation won't change until at least the mid-1990s.[9] Faced with perceived intolerable work circumstances, one can still say to oneself or to trusted cronies, "I'm saying to hell with the new dean and his insane desire to turn this place into Stanford – he can ruin this place without me," but that brave declaration no longer carries the conviction it once might have. Why should things be any better in some other academic pasture? If you are pushing 50 and have not published anything remarkable in the last 10 years, surely it is unreasonable to believe that you can dust off the Rolodex, get on the phone, fax your vita to a number of institutions, and be secure in a place where they really value teaching.

The situation, in short, is painful. The context has changed for the worse, and

one cannot leave the context. We are very close to what Gregory Bateson calls a double bind.[10] The context tells you that you are bad, but you cannot leave the context.

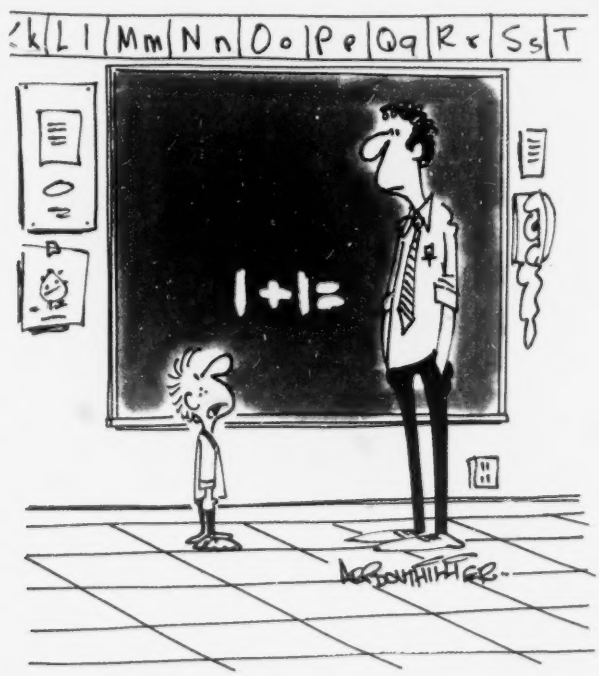
This is not to say that all faculty members are working at full capacity. In any institution, one will find professors content to coast, no matter what the program is and no matter what kinds of support are provided. The most reasonable response from administrators in such situations is a kind of triage. Surely we are not wishing for a return to halcyon days where nothing changed. "It is impossible for a state to remain forever in the peaceful enjoyment of its liberties and its narrow confines; for, though it may not molest other states, it will be molested by them."[11] What Machiavelli tells us is impossible for a state is equally impossible for an academic institution and its teacher preparation program. It is not a question of denying change. We should question the *direction* of the change in fundamental purpose.

Today, the direction of the change in schools, colleges, and departments of education is toward emulation of research institutions. When an academic administrator is in a tight race for a job, campaign promises tend to focus on solemn assurances of more laboratories and more rats – or whatever the current researchers like most – punctuated by even more solemn assurances that the place will be bigger and perhaps even better than Stanford in 10 years' time. Few competitors for the job will be so bold as to claim that Plainview State University would be better off trying to deliver the best possible teacher preparation program, while leaving the aspiration to be world-class research institutions to others.

The usual winner in the race for the deanship is the promiser of research prestige, the one who poses the rather silly challenge of making Plainview State another Stanford. Many faculty members tend to feel left out, ignored, stepped on, stepped over, treated with contempt. Often these faculty members wait – watching, counting the days – until the winner decides that three years is enough and that it is time to turn another former normal school into a world-class research institution. Hardly conducive to good preparation of teachers!

A more apt challenge would be to develop a good teacher preparation program and to ignore the supposed glories of the research institution. In terms of Hirschman's notions of traits, it might be much better (and much more ethical) to *take* faculty traits rather than to *make* them. Developing and supporting faculty members – rather than viewing them all as relics of a now-distant past – might not only prove to be a more decent way to treat people, but might also generate genuine commitment to a good teacher preparation program.

*It is not a question of denying change. We should question the* direction *of the change in fundamental purpose.*




*"For* that *you went to college?"*

1. William McNeill, *Venice* (Chicago: University of Chicago Press, 1974), p. xv.
2. Albert O. Hirschman, *Development Projects Observed* (Washington, D.C.: Brookings Institution, 1967), p. 131.
3. Kenneth A. Sirotnik, *Studying the Education of Educators* (Seattle: Center for Educational Renewal, University of Washington, Study of the Education of Educators Technical Report No. 2, 1988).
4. Roger Soder, *Faculty Work in the Institutional Context* (Seattle: Center for Educational Renewal, University of Washington, Study of the Education of Educators Technical Report No. 3, 1988).
5. See Kenneth A. Sirotnik, "Studying the Education of Educators: Methodology," *Phi Delta Kappan*, November 1988, pp. 241-47.
6. The questionnaire included similar items regarding what is and what should be important for promotion. Responses for the promotion items follow a pattern very similar to that for the tenure items.
7. Roger Soder, *Status Matters: Observations on Issues of Status in Schools, Colleges, and Departments of Education* (Seattle: Center for Educational Renewal, University of Washington, Study of the Education of Educators Technical Report No. 4, 1988).
8. W. H. Auden, "Roman Wall Blues," *Selected Poetry* (New York: Modern Library, 1958), p. 36.
9. See William G. Bowen and Julie Ann Sosa, *Prospects for the Faculty in the Arts and Sciences* (Princeton, N.J.: Princeton University Press, 1989).
10. Gregory Bateson, *Steps to an Ecology of Mind* (New York: Ballantine, 1972). See especially the essays on double bind theory in Part 3.
11. Niccolo Machiavelli, *Discourses*, trans. Leslie J. Walker (London: Penguin Books, 1970), pp. 335-36.

# On the Eroding Foundations Of Teacher Education

*We need to stop thinking about "courses" in foundations, Mr. Sirotnik maintains. Instead, wisdom, prudence, judgment, and responsible action must be integrated with method and experience in the education of educators.*

BY KENNETH A. SIROTNIK

IT WAS LATE morning. I was getting a bit grouchy, having been left waiting in the university's conference room for nearly an hour because of a major snafu in the scheduling of my interviews with students. We were now well into our Study of the Education of Educators; I had already interviewed 94 students at 22 colleges of education, and some fairly solid patterns were becoming apparent in their responses. My mind waxed methodological as I remembered Florian Znaniecki and his method of analytical induction: form your hypothesis, interview, narrow or refine the hypothesis, interview, . . . and in 30 or so interviews, a fairly stable finding will emerge.

I had always thought that this was a rather silly notion. Yet the first 10 interviews with students in our study had suggested a pattern that only grew stronger with each successive encounter. Perhaps

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*Illustration by Mario Noche*

Znaniecki was right. If we didn't interview students here at all, it would probably be no great loss. In fact, we could probably forgo the rest of our visits. After all, we had only seven institutions left.

Thoughts such as these generate a fair amount of guilt in a seasoned empirical researcher. Fortunately, my musings were interrupted as four students were herded into the conference room. You can't be a good educator without hope. Here was an opportunity, I thought, to get a lively conversation going. Typically, our research design called for individual interviews with students. But I welcomed the opportunity to depart from the routine. I recognized immediately that the students were the so-called nontraditional type – i.e., older, returning, postbaccalaureate. They seemed more mature, more worldly than the many young undergraduates I had interviewed elsewhere. Besides, this was the first truly urban, multiracial, multicultural campus that we had visited among the regional state universities in our sample. Surely my experience here would prove Znaniecki wrong!

As the four white students and I trooped into a small room and crowded around a table, I quickly rehearsed my plan to turn an individual interview routine into a group discussion. The improvisation went rather well. I shortened the usual introduction – why we are studying teacher education and so forth – and quickly got to who they were and why they were in the program.

My initial perceptions were fairly accurate. Three of the students were approximately 25 years of age and had decided to return to college to prepare to become teachers. The one younger student had just completed her baccalaureate and had entered the fifth-year teacher education program. One of the older students, clearly about to become a mother, was hoping to finish the program before she gave birth. Of the two males, one really wanted to be an actor but felt that he needed a back-up job. The other was preparing to be a science teacher and was quite serious about his subject and about the prospect of teaching. All four were secondary education students. None of them were terribly perturbed about being yanked out of their education classes. They agreed that the classes didn't matter much. What really mattered was getting out there in the classroom and teaching. Several wished they could just learn on the job, much as an apprentice learns a trade. The actor (a social studies teacher-to-be) expressed it succinctly: "I just want to be left alone to do my thing."

After weeks and weeks of this kind of interviewing, you become fairly adept at changing the direction of a conversation. And this I needed to do, if I wanted to get to one of the more difficult clusters of questions built into our study – those having to do with the moral and ethical dimensions of teaching. I worked my way toward several direct questions. "Is there any underlying educational philosophy in the teacher education program at this school?" I asked. After the all-too-familiar silence, one student asked the usual question: "What do you mean?" I got right to the core of the matter: "Well, for example, are there any underlying conceptions in this program as to what public schools are for – and *should* be for – in our democratic society?"

The silence was a bit thicker. The actor cut through it with the usual response: "Our professors don't try to indoctrinate us; they tell us to make up our own minds when it comes to beliefs and values." The mother-to-be on my right agreed. "Different people have different views of what ought to happen in schools," she said. "And those views need to be respected."

I had the sense that I was back in Iowa. A young senior there had politely reminded me that there is no one truth as to what schools are for. Or was that in Georgia, Massachusetts, or Colorado? It was, of course, all those places. The blank stares, the silences, the lack of comprehension, the articulation of relativistic values (both personal and programmatic) – all were too familiar. Znaniecki, you devil, you were right!

Perhaps it was my disappointment, or my grouchiness over botched-up scheduling, or the stuffiness of that little back room. I guess I'd heard the "to each his own" type of response once too often, and I departed from the interview protocol. Addressing the actor first, with a glance or two at the women on my right, I asked: "So it would be okay for a professor here to offer a course on the 'Pros and Cons of Child Abuse'?" Now the silence was as pregnant as the student beside me. The unborn child, some teacher's future charge behind the closed doors of a classroom, was particularly present.

It was a cheap trick, I admit. But the line between inquiry and action has always been a rather thin one for me. I had already obtained the information I needed for our research. Now I needed to teach. Moreover, I needed to test the hypothesis that these future teachers were indeed able to think critically and to engage in critical discourse. I needed to demonstrate (to them and to myself) that their apparent deficiency was a matter not of capability but of lack of opportunity and practice – not only in their current program but over some 17 years of formal education.

I didn't really get much of a chance to test my hypothesis. The students and I did have a conversation, however. They were a bit angry and frustrated by the challenge inherent in the title of my proposed course. "Child abuse is different; of course, we can all agree on that!" someone said.

"Is the abuse of children's bodies that much different from the abuse of their minds?" I countered. "We have compulsory public schooling in our constitutional democracy; these schools are ostensibly for the education of *all* children. Are there not any moral and ethical implications for how schools should be organized for student learning, for what teachers ought and ought not to do in their instructional practices, and, therefore, for what ought to be going on in your teacher education program?"

Although only a few minutes remained, our conversation had barely begun. Nonetheless, my impression was that these students were, indeed, capable of participating in such discourse. Their uncritical acceptance of "moral relativism" had been challenged, and they had begun to sense, if not to articulate, the dialectic between individual rights and the common good. They seemed ready to go beyond the daily details of doing education and to enter into the critical analysis of the perennial issues of why and how education should be done. Unfortunately, if our study's findings about this institution and most others in our sample are accurate, this session was probably the first and last such learning opportunity for these students.

AS I REVIEW some of these findings, readers should keep several points in mind. First, what is meant by the term *foundations* continues to be a matter of some dispute among educators and philosophers. Some see foundations as limited to the history and philosophy of education. Others see foundations as nearly the whole ball of educational wax. For

*Teachers, to whom we entrust the future human resources of our society, should be able to think critically.*

example, the contributions to George Kneller's edited collection on the foundations of education run the gamut from the history, philosophy, and sociology of education to educational economics, politics, law, and psychology – and on to considerations of the nature of scientific inquiry, organization and administration, curriculum and instruction, elementary and secondary education, and higher and continuing education.[1]

For the purposes of our study, we considered foundations to include the history, philosophy, and sociology of education as well as contemporary issues in the sociopolitical study of education and educational policy. In our survey instruments, we separated these foundational studies from educational psychology, general and specific methods, field experiences, and student teaching. Thus we had generic points of comparison across programs. In general, neither students nor faculty members had trouble making these distinctions.

However, for a number of different reasons, some people feel that the term *foundations* conveys the wrong message. For example, Harry Broudy argues that foundational studies should be integrated throughout the curriculum of teacher education and not just be offered as a "first" course or a "supporting" course, as the metaphor might suggest.[2] Donald Warren, on the other hand, argues that foundational studies are not central in the first place – that they serve to contextualize the work of teachers from the margins, not the core, of educational practice.[3]

This brings us to the second point that readers should keep in mind. Our study was conceived from the antithesis of Warren's point of view. For us – and for quite a few others who have considered the role of history, philosophy, and sociology in the education of educators – foundational studies are absolutely central to pedagogical theory and practice.[4] That so much controversy exists over the importance of foundational studies suggests just how important they are. It suggests that teachers, to whom we entrust the future human resources of our society, should be able to think critically. It suggests the profound connection between the ideology of schooling – what the purposes and functions of public schools ought to be – and what actually goes on within the walls of school buildings and behind classroom doors. While I cannot pursue the full scope of this argument here, most of it is contained in our recent volume on the moral and ethical dimensions of teaching.[5]

The third point readers need to remember is that, although this article focuses on the erosion of foundational studies in teacher education, this issue is but one aspect of the erosion of critical thought in our education system generally – but one point on a vicious circle. It is a rather crucial point, however, since it is the point at which educators enter the education system. Alexis de Tocqueville may have been the first to note the antiphilosophical bent of American culture.[6] Richard Hofstadter's more recent analysis is also seminal.[7] The intellectual quality of baccalaureate education generally has not received high marks from those who have studied it in some depth.[8] And although I take issue with the politically conservative nature of Allan Bloom's analysis, his insight into the mindless parroting of moral relativism by today's students cannot easily be dismissed.[9] My little group of four students fit Bloom's portrait well. In that sense the group was a representative sample of students in universities, not just those in teacher education programs.

BUT THESE were only four students out of more than 500 that we interviewed. (I've already hinted that the results of the other interviews were markedly similar, however.) Moreover, nearly 3,000 students responded to a comprehensive survey containing a number of items that were directly relevant to foundational studies. And we did not neglect faculty members. We interviewed more than 800 professors, asking them questions similar to those I asked in the student interview recounted above. More than 1,200 responded to a faculty survey; 772 were directly involved with the education of teachers and responded to items paralleling those in the student survey. In addition, we collected a truckload of curriculum documents and program specifications from which we drew a number of inferences. Finally, we formally observed 66 teacher education classes, 20 of which were "introduction to education" classes in which foundational studies are typically "covered."

Several papers in our series of technical reports include substantial summaries of the data we collected.[10] In this article I will present only selected, but representative, portions of the data.

I personally interviewed 128 students. Among the many clusters of questions I asked were the following: Are there any consistent values, beliefs, or moral imperatives that drive what goes on in your teacher education program? Is there an underlying philosophy? Where in your instructional program do you deal with what the purposes and functions of public schooling in a democratic society should be? For example, to what extent is there compatibility between the goals of educational equity and excellence? Is there any link between these issues and what teachers should (and should not) do in their instructional practices? To what extent are your assigned readings and your class discussions about other philosophical, social, and political concerns and issues in education?

Over and over again, we encountered the same patterns of responses. First, regardless of which question (or variant of the question) we used to begin this segment of the interview, the students generally drew an initial blank. Sometimes they were speechless. Often they asked for clarification. I came away with the definite impression that the language of these questions was simply not part of their vocabulary. It often took several questions and follow-up probes to elicit substantive responses.

Second, the substantive responses tended to be bimodal: students either indicated that they were not aware of any underlying philosophy driving the program, or they spoke in terms of some variant of moral or philosophical relativism (either their own or that of a professor or program). At several major pri-

vate universities, students gave me the following kinds of responses:

> Everyone probably has their own values, beliefs, philosophy.
>
> * * *
>
> They [the program] say that you, as teacher, have a say – take a stand in your school. But they [the program] don't take specific stands.
>
> * * *
>
> We haven't really talked about this stuff. But every idea has a counter idea. So many different philosophies. . . . Professors advocate teachers to make their own decisions based on their own knowledge and their professional duties.

Responses from students attending large, regional state universities (formerly normal schools and state teachers colleges) included the following:

> Each of us are different people . . . lots of diversity. . . . Each school will have to have its own philosophy.
>
> * * *
>
> I have my own values, but not to put them off on students. [Interviewer: What about this teacher education program?] Yeah . . . well, I don't know . . . maybe that the teacher is key to everything.
>
> * * *
>
> Do you mean drugs and sex? [Interviewer poses several of the above clarifying questions.] Oh, well, I did have a philosophy class. We learned about different views on teaching. But I can't remember too much about it.

At major public research universities, students reported:

> We don't get into controversial issues in that we all agree on most instructional practices.
>
> * * *
>
> Everyone should have their own set of values.
>
> * * *
>
> The program tries to get students to examine their own values. . . . The norm here is not to get into critical dialogue, not to challenge peers.

Sometimes the contradictions in the responses were fascinating, as in the following remarks from a student at a regional state university:

> Educational values should come from our own American system of government. For example, equality. To promote this, students need to think critically. In foundations, these issues were addressed. [Interviewer: Like tracking?] Yes. I'm all for it. . . . It's unfair to the top students to bring them down to lowest common denominator. It's the closest thing we have to individualization. Ultimately, we're left to make our own critical judgments. Gosh, this is a really good question. . . . we must act in the best interests of students.

Occasionally, we were rewarded with more insightful statements from students. My colleague Roger Soder reports a dozen such statements (the only ones he could find out of 123 student interviews). Here are three examples from different institutions:

> It's really important that you have a certain set of morals because you're a role model. The morals of the community – honesty, don't steal, don't harm others. You're shaping the morals of young children. You have as much influence as the home. (Regional public university)
>
> * * *
>
> You need to have good character. Kids are with you more than with their parents growing up. [Interviewer: What's good character?] Being moral, having moral beliefs. You're never neutral. Teaching is all about values. Kids can tell your beliefs. (Private liberal arts college)
>
> * * *
>
> . . . but there's a fine line, state-controlled morals. It's a fiduciary relationship, not an equal relationship between teachers and students. The teacher has great strength in this situation; it's more like a doctor/patient relationship. (Regional public university)[11]

To what extent are critical discussions and reflective habits fostered by the foundations courses offered to students? Most foundations courses follow a lecture format with little student participation. Even in a program that seemed unusually rigorous in its foundational studies, a student reported this frustration: "We're getting crammed with stuff. . . . Hopefully we can talk about what it all means."

In the more typical, less rigorous programs, foundations come packaged in an "introduction to education" course – a smorgasbord of "crucial issues."[12] As students from two regional state universities reported:

> We covered women's role in education, multicultural ed, the textbook crisis, problems in getting jobs, unions. . . . This was one of the few nonstructured classes – nice compared to getting Piaget over and over again and having to memorize Bloom's Taxonomy. (Major public university)
>
> * * *
>
> . . . drugs, discipline (a biggie), sex, AIDS, gay teachers, black teachers, and the difficulty in understanding Black English. (Regional public university)

Sometimes students reported opportunities for class discussions, but there remains some question about how useful

*"You'd better come quickly. The first-graders have put Mr. Lamb in time out."*

*For their interest and value, foundations are rated a full point or more lower than other courses in the program.*

those discussions are. A student at a major state university reported:

> In foundations we had an issue per day, pros and cons, lots of student discussion: mainstreaming, public vs. private schools, tracking. [The professor would] never advocate one opinion or another, kind of left us hanging. I couldn't figure out the right or wrong answer.

WE ASKED essentially the same questions of faculty members, and we got many of the same answers, although couched in more sophisticated terminology. I have neither the space nor the inclination to give examples of such replies. More interesting were the comments of faculty members who understood the importance of the questions and gave us honest evaluations of their schools' programs. Soder's report provides some examples of the more substantive responses from a variety of institutions:

> History of education is not required except for the educational leadership programs. There hasn't been anybody here for years who can teach philosophy of education. The state department of education has so many requirements that it's hard to get in any more of your own. (Major private university)
>
> * * *
>
> The question of moral imperatives doesn't come up formally. It comes up, some of it, in the foundations course. I can't say I've done a lot on that. (Public research university)
>
> * * *
>
> We don't have programs, we have collections of courses. We don't look at the nature of schooling, the nature of people, as we should. There's no sense of purpose. Courses are just a hodgepodge that grew like Topsy. We're plugging holes in dams. Individual professors will deal with effective schools or moral imperatives. But there's no framework. (Major public university)
>
> * * *
>
> Moral imperatives. [Long pause.] Well, I think there's been some discussion in some of the classes. Awareness does exist. [Long pause.] We do a poor job on the multicultural issues.[13] (Regional public university)

In the course of our study we had the rare opportunity of visiting a school of education that still had a separate and intact department of educational foundations. One professor at this public research university provided me with the most thoughtful response I received in the 151 faculty interviews that I conducted:

> My social foundations course is not the usual hodgepodge. The term *social foundations* is chosen carefully to reflect a cross-disciplinary and critical study of the relationship of schools to society. *Foundations* does not mean fundamentals – it means *social underpinnings*. We look systematically at the historical origins of political thought . . . and explore the consistencies of various theories. For example: tensions between conceptions of liberty and equality, equity and excellence. . . . How could one exist without the other? Whose interests are and are not being served?

Yet, as this professor lamented, no consistent programmatic philosophy existed in the teacher education program at that university, and two students in the same program could end up with very different experiences. Sure enough, this was borne out in my interviews. When I asked the students about the extent of their exposure to critical discussion about crucial issues, one student reported, "Yes, lots of good philosophical issues and arguments in [the above professor's] class." Another student replied, "Not much. . . . No specific philosophy or common thread – depends on the instructor."

Our survey instruments also tapped into perceptions and sentiments regarding foundational studies. In all items comparing foundational studies to other courses in the program or to noneducation courses, the foundations courses were viewed least favorably. For example, we asked students and faculty members to rate courses in the teacher education program according to how much of a contribution they would make to students' future success as teachers. We asked students to rate the interest level of the courses, and we asked faculty members to guess these ratings. We also asked students and faculty members what they would do with these courses if they were redesigning the program. To test the myth that education courses generally are rated poorly, we asked students to compare their level of interest in education courses to their level of interest in noneducation courses.

The results for a representative selection of teacher education courses speak for themselves (Tables 1-3). For their interest and value, foundations are rated a full point or more lower on the scale than other courses in the program. More than 25% of the respondents would like to see less emphasis on foundations. And in terms of interest level, all but the foundations courses fare quite well when compared to noneducation courses.

My colleague Phyllis Edmundson examined the curriculum of 28 foundations courses that were offered in 26 of the 29 programs we visited. She also observed 20 foundations classes in action. Her findings are neither encouraging nor surprising in light of the comments, perceptions, and sentiments expressed by the students and faculty members we interviewed.[14] These courses were typically introductory in nature, came early in the students' programs, consisted of haphazard collections of issues and topics, used a lecture format, and were mostly forgotten by the time students began their student teaching. In no instance were the historical, philosophical, and social foundations integrated throughout the teacher education curriculum. In only a few cases were students challenged to think critically or to engage in the kind of "reflective practice" we hear many reformers calling for today. Ironically, in those courses that seemed to present the greatest opportunities for critical thought and discussion, the fewest of these experiences were reported or observed.

SO WHAT DO we make of this rather unattractive portrait of foundational study? Are our results a fluke, a happenstance of unfortunate sampling? After all, we visited only 29 of the 1,300 or so programs

that claim to prepare teachers. Readers must answer this question for themselves, drawing on their own recollections of and experiences with teacher education programs.

A review of the literature lamenting the erosion of foundations and foundational study, however, suggests that the phenomenon is widespread, not new, and not abating.[15] In 1958, for example, Paul Woodring concluded that "educational philosophy in America has fallen upon evil days. . . . Because we have not given sufficient attention to philosophical problems, we are afraid to attempt to discriminate between the profound and the trivial or even to see that we must."[16] In 1963 James Conant studied 77 teacher education programs; his conclusions regarding foundational studies could actually be used to summarize our findings today:

> In the majority of the institutions I visited, the future teacher starts his or her sequence of professional courses by taking the same introductory courses. . . . Frequently the type I describe as "eclectic" carries the label "foundations of education." Those in charge . . . often attempt to patch together scraps of history, philosophy, political theory, sociology, and pedagogical ideology. . . . Occasionally, to be sure, one encounters a mature scholar who has ranged so broadly and so deeply over the fields of philosophy and social science that he can . . . give his students a clear and exciting picture. . . . I have rarely talked with students or school teachers who had good words to say for an eclectic foundations course. Perhaps the kindest word used to describe most of these courses was "pathetic."[17]

In the last two decades, a base of literature has accumulated that directly or indirectly confirms the findings of our study and of previous studies. For example, we have located more than 30 articles and essays that refer to or presume a serious erosion, decline, decay, or demise of foundational studies in teacher education programs.[18]

As I suggested at the outset, the wrong conclusion to draw from the perceived irrelevance, marginality, and disintegration of foundational studies is that such studies are actually irrelevant. The relevance of foundational study is perennial. But our houses of education and the educator preparation programs within them are in serious trouble. Just repairing the foundations will not suffice; sturdy construction must extend from floor to ceiling. Issues such as those suggested in our interview questions are present in every room. Technique is not enough; wisdom, prudence, judgment, and responsible action must be integrated with method and experience in the education of educators. The means by which children develop and learn are crucial, but so are the ends.

Foundations courses are easy targets. We make them visible and vulnerable in a society that has a penchant for separating thought from action. Is it any won-

**TABLE 1.**
**Student and Faculty Perceptions of the Contribution and Interest Level of Typical Courses in Teacher Education**

| Course Type | Contribution* | | Level of Interest** | |
|---|---|---|---|---|
| | Students | Faculty | Students | Faculty |
| Foundations | 3.7 | 4.1 | 3.6 | 3.0 |
| Educational psychology | 4.9 | 5.1 | 4.7 | 4.1 |
| General methods | 5.2 | 4.9 | 4.6 | 4.2 |
| Subject-based methods | 5.7 | 6.0 | 5.3 | 5.5 |
| Student teaching | 6.2 | 6.6 | 6.6 | 6.6 |

*Figures are means on a seven-point scale (1 = no contribution at all; 7 = a very great contribution).
**Figures are means on a seven-point scale (1 = not at all interesting; 7 = extremely interesting).

**TABLE 2.**
**Student and Faculty Recommendations for Redesigning the Teacher Education Program**

| Course Type | More Emphasis % | Same Emphasis % | Less Emphasis % | Eliminate % |
|---|---|---|---|---|
| Foundations | | | | |
| Students | 16 | 54 | 22 | 8 |
| Faculty | 18 | 53 | 25 | 4 |
| Educational psychology | | | | |
| Students | 29 | 59 | 10 | 2 |
| Faculty | 32 | 58 | 10 | 0 |
| General methods | | | | |
| Students | 35 | 55 | 8 | 2 |
| Faculty | 22 | 50 | 21 | 7 |
| Subject-based methods | | | | |
| Students | 53 | 43 | 3 | 1 |
| Faculty | 52 | 38 | 9 | 1 |
| Student teaching | | | | |
| Students | 44 | 55 | 1 | 0 |
| Faculty | 47 | 50 | 3 | 0 |

**TABLE 3.**
**Student Ratings of the Interest Level of Education Courses Compared to Other Courses**

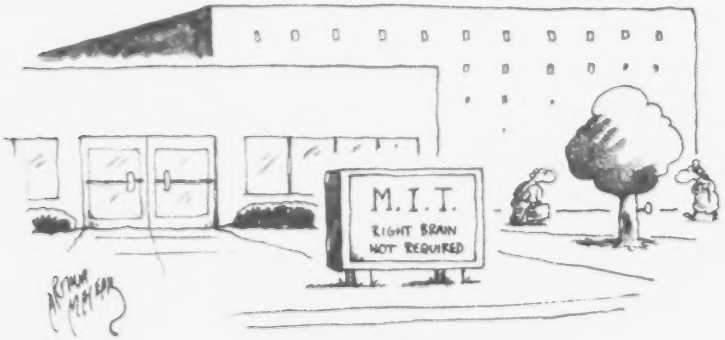
| Course Type | More Interesting % | About the Same % | Less Interesting % |
|---|---|---|---|
| Foundations | 21 | 42 | 37 |
| Educational psychology | 40 | 41 | 19 |
| General methods | 34 | 46 | 20 |
| Subject-based methods | 54 | 34 | 12 |
| Student teaching | 85 | 12 | 3 |

der that students consistently evaluate their student teaching as the most relevant and satisfying experience in the program? Is it surprising that even the best of foundations courses would be viewed as obscure and irrelevant in the press of "becoming" a teacher? We need to stop thinking about "courses" in foundations and start thinking about foundational study and experience. This pursuit is not something that should happen at the beginning, middle, or end of preparing to teach; rather, it is something that should be integrated throughout preservice instruction and practice teaching.

Instead of packing the whole experience into a single course, why not have students meet monthly throughout their entire programs for several hours of concentrated study and critical discussion? Field experiences could be deliberately arranged to bear directly on historical, philosophical, and sociological studies. We could design reflective seminars in which students could discuss critically their daily experiences in schools and relate them to their foundational studies. As a number of educators have suggested, the use of the case study method (as in law school) could ground critical analysis and discussion in the realities of school practice.[19] These suggestions, of course, have implications for the whole of the preservice curriculum.

TWENTY-FIVE YEARS ago a young teacher-to-be sat with his fellow students in the Royce Hall auditorium on the UCLA campus. Together, the class watched Professor George Kneller pace back and forth across the stage as he lectured on the foundations of education. He was a great speaker, clearly enthusiastic and knowledgeable about his field. This was a solid course, not a miscellaneous array of Dewey, drugs, and dos and don'ts in the classroom. Idealism, realism, pragmatism; epistemology, axiology, metaphysics, logic; perennialism, progressivism, essentialism, reconstructionism . . . facinating ideas that often echoed in the background of the young man's thoughts as he worried about his lesson plans and upcoming student teaching assignment. He also worried about the whole idea of teaching and about whether he had really made the right decision. And what in the world did this course have to do with any of it, anyway?

Etched in large letters across the top of the stage were these words: "Education is learning to use the tools which the race has found indispensable." Those words etched themselves in the young man's brain as he gazed about the auditorium during the 20-week semester. What *were* those tools, he wondered. Now, of course, I know what Ernest Carroll Moore had in mind. But much more could have been done to make it clear to me then.

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# The Function of the Peer Group in Teacher Socialization

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Illustration by Mario Noche

*By design and by default, great numbers of future teachers are being socialized into the belief and practice that teaching is largely an isolated and individualistic activity, rather than a shared enterprise, the author maintains.*

BY ZHIXIN SU

MANY STUDIES have cited the function of the peer group as an important mechanism for socializing new members of a profession.[1] In some organizations, groups of peers who entered the profession earlier help to socialize groups of newcomers. When this occurs, not only do the new recruits become socialized, but those who serve as role models find their own values reinforced. Moreover, individual changes in attitudes, values, and motives are based on a group consensus. The peer group can also help to reduce strain and alleviate tension, thereby easing an individual's entry into the organization or profession.

For the Study of the Education of Educators (SEE), we designed both survey items and interview guides to explore and examine the formation of peer groups and the significance of peer relationships among teacher candidates. The following discussion is based on findings from the survey of all 29 selected teacher training institutions in our sample and on interview data I collected in visits to 11 of

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the 29 institutions. I interviewed a total of 101 people – 45 graduating teacher candidates, 40 teacher education faculty members, and 16 cooperating teachers in schools in which the candidates were student teaching.

## FORMATION OF PEER GROUPS

In nearly all the programs we visited in the SEE, we found little evidence of the formation of a strong community among education students as a whole. However, there was a sense of group cohesion among students in certain subprograms. Those in early childhood education, in elementary education, and in middle-grades education, for example, often formed small groups among themselves. Usually students in these groups went through the same courses and seminars; sometimes they were placed in clusters for student teaching. There were also national and regional professional associations trying to involve these students in group activities.

However, most of the secondary education students in our sample had no sense of group identity as education students, although there were such departmentalized cliques as math clubs for students in math education. Secondary education students generally tended to see themselves as belonging more to their subject-matter disciplines than to schools of education. A secondary education student from a major state university lamented that she could not relate to any of the other education students in her training program. The classes were too large, and there were no organized activities for students, she said. She seldom saw the same faces twice in the education classes she attended. Although she tried to suggest to other students that they should get together after class, she got no response. Such a feeling of loneliness is not uncommon among secondary education students in large public universities.

Nor was there much communication and interaction between elementary and secondary education students. "They don't rub elbows together," observed a professor at a major public university. A similar gap existed between undergraduate education students and graduate education students. Although the undergraduate students I interviewed expressed the wish that they could make friends with graduate students, the graduate students preferred to make friends among themselves. Age and experience determined with whom they chose to work and study, they said. By the same token, students who enrolled in a program in a given year knew little and cared less about students who had enrolled in the previous year or who would enroll in the following year.

Survey data regarding peer relationships among the students support the findings from the interviews. Table 1 summarizes information about students' acquaintance with one another in their training programs. Of the 2,787 students who responded to the surveys, only 11% claimed to know most of the other students in their programs, 21% had made friends and many acquaintances, nearly 37% had made friends and some acquaintances, but nearly 27% of the students had made only some casual acquaintances. Approximately 4% of the students had not really come to know any of their peers very well.

When examined by institutional type,[2] we found that the percentage of students who knew most of their fellow students was *smallest* in the regional public universities, the campuses with the largest student enrollments in education. Moreover, elementary education students knew one another better than did secondary education students, and traditional undergraduate students (those 24 years of age and younger) were better acquainted with one another than were nontraditional students (those 25 years of age and older) enrolled in postbaccalaureate programs.

As the students progressed through their training programs, they tended to feel more like members of a larger group of people who would become teachers.

TABLE 1.
**Students' Acquaintance with One Another**

| Extent of Acquaintance | By Institutional Type: Flagship Public % | Major Public % | Regional Public % | Major Private % | Regional Private % | Lib. Arts Private % | Overall % |
|---|---|---|---|---|---|---|---|
| Do not know anyone well | 2.6 | 6.2 | 4.6 | 2.6 | 6.0 | 2.7 | 4.4 |
| Some casual acquaintances | 18.2 | 29.2 | 28.7 | 21.8 | 30.1 | 31.3 | 26.6 |
| Friends and some acquaintances | 37.1 | 34.3 | 37.8 | 41.0 | 33.7 | 33.0 | 36.8 |
| Friends and many acquaintances | 23.5 | 18.7 | 22.0 | 19.2 | 16.3 | 13.4 | 21.1 |
| Know most students | 18.6 | 11.6 | 6.8 | 15.4 | 13.9 | 19.6 | 11.0 |
| N | 571 | 353 | 1,507 | 78 | 166 | 112 | 2,787 |

| Extent of Acquaintance | By Level: Elementary Education % | Secondary Education % | By Age: Traditional (24 or Younger) % | Nontraditional (25 or Older) % |
|---|---|---|---|---|
| Do not know anyone well | 3.2 | 6.3 | 2.6 | 7.4 |
| Some casual acquaintances | 21.8 | 33.8 | 21.8 | 34.8 |
| Friends and some acquaintances | 38.1 | 34.8 | 37.1 | 36.5 |
| Friends and many acquaintances | 26.2 | 13.7 | 24.9 | 14.8 |
| Know most students | 10.7 | 11.4 | 13.7 | 6.6 |
| N | 1,659 | 1,070 | 1,746 | 1,033 |

Once again, elementary education students and traditional undergraduate students seemed to have stronger feelings of togetherness than did secondary education students and nontraditional students.

Some patterns emerged when we examined the frequencies of both formal and informal contacts among the students. Nearly 25% of the students had never met formally outside of regular classes with other groups of students in their training programs, and about 17% of the students had never met their fellow students informally outside of their regular classes.

The situation in major private universities and in flagship public universities seemed to be better than that in the other four types of institutions under study. However, the overall percentage of students who reportedly had gathered together outside of their regular classes at least once a day was very small: only 2.2% on a formal basis and only 7% informally. In general, the students in our sample seemed to meet informally more frequently than formally. In addition, elementary education students had more frequent contacts among themselves than did secondary education students, and traditional students gathered together more often than nontraditional students.

## SIGNIFICANCE OF PEER RELATIONSHIPS

Most persons whom I interviewed, both teacher candidates and teacher educators, did not seem to be disturbed by the lack of a sense of community or by the weakness of peer groups in their training programs. In our surveys, we asked both students and faculty members to assign importance to a list of 11 selected sources of influence in socializing students. Both groups considered peer influence to be not very significant, although the faculty members assigned it more importance than the students did. Students ranked peers low as a source of influence – third from the bottom of the list. Not surprisingly, the most significant sources of influence identified by both students and faculty members were student teaching experiences and cooperating teachers in practice schools.

The interview data indicated that, in general, younger students, elementary education students, beginning students and those who lived close to one another on or near campus tended to assign more importance to peer support than older students, secondary education students, and those who went home immediately after class. The students reported that they could get some support and comfort from peers, but they said that they did not rely on peers as a significant source of influence on the development of their educational and professional beliefs, attitudes, and values. Perhaps a student in a major private university put it best by asserting that peer influence serves a "reassuring function" for teacher candidates. Our findings confirmed earlier observations by Ann Karmos and Carol Jacko that peers play only a somewhat limited role in providing emotional support for teacher candidates.[3]

There was a singular exception in the programs we visited. At a small private liberal arts college, elementary, secondary, graduate, and undergraduate education students were all brought together as a close-knit group in the same seminars and group gatherings. Peer interactions in this program were frequent and intense. Both students and faculty members described the atmosphere as very pleasant, relaxed, friendly, and supportive. Students seemed to enjoy being there; in addition to taking courses and student teaching together, they also had fun together. Some students became very close friends. Naturally, both faculty members and students at this school valued peer relationships and support to a much greater extent than did individuals interviewed at other teacher training institutions. This example demonstrates that it is possible to build strong communities among those who are preparing to become tomorrow's teachers.

## INTERPRETATION AND IMPLICATIONS

The general absence of strong peer groups and strong peer relationships among teacher candidates explains in part the lack of a shared moral vision, which we found to be characteristic both within and across institutions.[4] The survey data suggest that there were few opportunities for teacher candidates to come together to reflect on and discuss critical issues in education, to say nothing of reaching common understandings.

The interview data further revealed that during the limited time that some of the students did spend together, they more often focused on practical matters and real problems that they encountered in schools – teaching materials, testing methods, pupils' behaviors and attitudes, relationships with pupils' parents, and such personal concerns as sports and dating. As a result, what the students developed in the process of socialization were individual utilitarian perspectives on teaching and a focus on what would work to solve various immediate problems, rather than a shared understanding of the possible ethical and long-range consequences of classroom actions.

There appear to be several reasons for the lack of strong influence by the peer group and for the generally careless attitudes toward this lack among teacher candidates. First, as shown by data summarized in Table 2, teacher training programs in our sample did not expend a great deal of effort in helping beginning students to feel part of a community, although private institutions appeared to try harder than did public institutions. Moreover, Table 3 shows that, in both public and private institutions, about 42% of teacher candidates never attended any orientation meetings with fellow students at the beginning of their programs. About 32% attended only one orientation meeting with their peers upon entry. The situation seemed to be a little better in elementary education programs than in secondary education programs.

TABLE 2.
**Faculty Perceptions of Programs' Efforts to Make Beginning Students Feel Part of a Community**

| | By Institutional Type | | | | | | |
|---|---|---|---|---|---|---|---|
| | Flagship Public | Major Public | Regional Public | Major Private | Regional Private | Lib. Arts Private | Overall |
| Extent of effort* | 4.4 | 3.6 | 4.3 | 5.6 | 4.9 | 5.3 | 4.4 |
| Total N | 189 | 138 | 424 | 62 | 80 | 39 | 932 |

*Figures are means on a seven-point scale of increasing effort.

TABLE 3.

**Frequency of Orientation Meetings That Students Attended Together at the Beginning of Their Programs (Student Perceptions)**

| Frequencies | By Institutional Type | | | | | | |
|---|---|---|---|---|---|---|---|
| | Flagship Public % | Major Public % | Regional Public % | Major Private % | Regional Private % | Lib. Arts Private % | Overall % |
| 0 | 50.3 | 58.7 | 32.3 | 36.7 | 51.2 | 59.5 | 41.6 |
| 1 | 26.3 | 27.8 | 36.5 | 22.8 | 25.6 | 26.1 | 31.9 |
| 2 | 15.2 | 9.4 | 20.1 | 13.9 | 12.2 | 5.4 | 16.4 |
| 3 | 4.0 | 3.7 | 5.3 | 11.4 | 4.9 | 4.5 | 4.9 |
| 4 | 0.5 | 0.0 | 1.3 | 2.5 | 1.8 | 1.8 | 1.1 |
| 5 or more | 3.7 | 1.4 | 4.5 | 12.7 | 4.3 | 2.7 | 4.1 |
| N | 571 | 356 | 1,515 | 79 | 164 | 111 | 2,796 |

| Frequencies | By Level | |
|---|---|---|
| | Elementary Education % | Secondary Education % |
| 0 | 38.1 | 46.7 |
| 1 | 32.7 | 31.3 |
| 2 | 17.3 | 15.0 |
| 3 | 5.5 | 3.7 |
| 4 | 1.4 | 0.6 |
| 5 or more | 5.0 | 2.7 |
| N | 1,668 | 1,070 |

The interview data also indicated that teacher education programs made few deliberate efforts to treat incoming students as a class, although the approach has been widely adopted by other professional training institutions, such as business colleges, medical schools, and law schools. In recent years, some teacher education reformers have proposed the use of this approach,[5] and certain exemplary teacher education programs actually organized their trainees into consistent groups.[6] However, most teacher candidates still go through their programs individually.

Several faculty members interviewed in this study recalled that, at one point or another, their programs did begin to try treating incoming groups as distinct classes, but such efforts were usually not sustained. Therefore, the first implication of the SEE for reform related to the socialization of teachers is a call for deliberate and sustained efforts on the part of teacher training programs to use the class-based approach. Once an organizational structure of peer support is established, members of each year's class are likely to begin to share experiences, discuss common and uncommon problems, and arrive at enlightened understandings of the critical issues in teaching and schooling.

A major problem in making sustained efforts to treat students as distinct classes is the short duration of teacher training programs. Findings from our study reveal that some programs last less than a year. The students interviewed complained that they simply did not have sufficient time to build lasting ties and to make permanent friends. Students in early childhood education and elementary education programs were able to form more supportive bonds than were secondary education students, because they usually spend more time together. An important reason for the presence of a strong peer culture among students in medical schools is certainly the duration of the program. The situation in teacher education can be improved by early recruitment of students into socialization experiences and by an increase in the number of hours students are in contact with one another during their training.

Another obstacle to the formation of strong peer groups among education students is the fact that a great number of those students (two-thirds or more in some institutions we visited) work part-time, and some even work full-time in order to support themselves while they attend the university. While many students did not feel the need to socialize with their peers in teacher training after class, many others reported that they simply had no time for socializing. By contrast, medical students usually do not hold part-time jobs while they are in school. Instead, they devote eight or more hours to their program every weekday, they work and study together in the labs and on the wards of teaching hospitals, and they are likely to spend many evenings and weekends together as well.[7]

In the future teacher candidates should probably be required to invest more time and energy in their professional training than in their part-time work. More scholarships for students and more funding for teacher education programs are essential if this problem is to be solved. Less than 3% of the education students in our sample had scholarships as their primary source of income. Nearly 20% of the students had to rely on themselves as the breadwinners and tuition payers.

Living arrangements are also a reason for the lack of a sense of community among teacher candidates. According to our survey data, more than 70% of the students in our sample commuted to school rather than living in dorms or in houses or apartments on or near the campus. Of course, there is the expected difference between age groups. The younger, traditional undergraduate students tended to live on campus more often than the older, nontraditional students, 90% of whom commuted. The interview data showed that, for those who shared accommodations with students in the same field, peer influence seemed to be more significant. Clearly, efforts should be made to encourage education students to live close to their peers wherever possible, either on or off campus. For nontraditional students, informal gatherings should be made regular events so that they can have the opportunity to develop a sense of collegiality with peers.

Moreover, as Robert Friebus found, the lack of a strong peer culture among teacher candidates is partially due to the poor articulation between training on the college campus and practica in school settings.[8] In general, we found little peer-group solidarity carried over from classroom experiences into student teaching.

In some of the programs we visited, teacher candidates started out as a group, and peer influence was stronger at the beginning of their programs. However, as they progressed through individual specialties and took different courses, students became more separated from one another, with little access to group support. When the time for student teaching came, some of the programs tried to place student teachers in clusters. Nonetheless, most student teachers lost contact with those with whom they had studied earlier.

In addition, even if assigned to the same cooperating school, the student teachers in our sample did not necessarily communicate with one another, a pattern that echoes the isolated situation of their cooperating teachers. The student teachers reported that, even at this stage of their programs, getting a good cooperating teacher and being assigned to a good school for student teaching were more important than staying with peers. Therefore, the placement of student teachers was arranged on the basis of individual needs and geographical convenience. Some of the student teachers we interviewed felt isolated from their peers and friends, but they said that they were just too busy to reach out to make contact.

We need to rebuild the broken bridges of communication between the teacher training institutions and the schools. Moreover, we need to make organizational arrangements to allow student teachers to interact extensively with their peers, with their supervisors from both the college and the schools, and with other teachers and administrators at the cooperating schools.

The last – but certainly not the least important – reason for the lack of a strong peer culture in teacher socialization is the value American society places on individualism. The organization of the training programs we visited, especially the structure of the student teaching experiences, tended to encourage the development of individualism. For decades, teaching in American public schools has been known to be a lonely and isolated activity.[9]

Such an individualistic mode also characterizes the initial socialization experiences of teachers. Marooned in their "egg-crate" classrooms, novice teachers have been compared by Dan Lortie to Robinson Crusoe.[10] Data from our surveys and interviews indicate that students in the programs under study did not have many collegial interactions – formal or informal – in their foundations and methods courses or in their student teaching. In their beginning teaching experiences in cooperating schools, the student teachers often found themselves physically isolated in a "sink-or-swim" situation.

The image of student teachers presented by the current study is that of a group of individuals learning to teach on their own and depending on their individual motivation and initiative. Overcoming this kind of isolation and developing a sense of shared experience and intellectual and professional community should be high on the agenda for change in teacher education. Teaching is a noble but draining profession. Teachers need peer support to carry out their mission and to stay the course through good times and bad.

To conclude, findings from the SEE suggest that the function of the peer group in the socialization of teachers is in general very weak. Teacher candidates are not encouraged by their programs to develop a strong peer culture. By design and by default, great numbers of future teachers are being socialized into the belief and practice that teaching is largely an isolated and individualistic activity, rather than a shared enterprise.

This problem cannot be solved in one day – or in one way. But making deliberate efforts to build ties and create communities among teacher candidates, increasing the opportunities for students to congregate, establishing more scholarships and assistantships for teacher candidates, encouraging traditional teacher candidates to live close to one another on or near campus, helping nontraditional students to gather with their peers more often, keeping teacher candidates in the same peer group throughout their training (especially into student teaching), including teacher candidates in the larger community of teachers in cooperating schools, and combating individualism and teacher isolation are steps that the profession can take immediately.

When teacher candidates experience their professional socialization as a close-knit and caring group, rather than as dis-associated individuals, they will have the opportunity to reach common understandings about the nature of education, schooling, and the teaching profession. And they will begin to understand and appreciate the democratic mode of associated living, a mode that John Dewey long ago envisioned for American schools and society.

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1. See, for example, Howard S. Becker et al., *Boys in White* (Chicago: University of Chicago Press, 1961); William M. Evan, "Peer Group Interaction and Organizational Socialization: A Study of Employee Turnover," *American Sociological Review*, vol. 28, 1963, pp. 436-40; and Virginia L. Olesen and Elvi W. Whittaker, *The Silent Dialogue: A Study in the Social Psychology of Professional Socialization* (San Francisco: Jossey-Bass, 1968). The study I am reporting in this article is part of the Study of the Education of Educators. For a full report of my findings, see Zhixin Su, *Exploring the Moral Socialization of Teachers: Factors Related to the Development of Beliefs, Attitudes, and Values in Teacher Candidates* (Seattle: Center for Educational Renewal, University of Washington, Study of the Education of Educators Technical Report No. 7, 1989).

2. The typology of institutions is based on the Carnegie classification of institutions of higher learning. For further clarification of the typology, see Kenneth A. Sirotnik, *Study of the Education of Educators: Methodology* (Seattle: Center for Educational Renewal, University of Washington, Study of the Education of Educators Technical Report No. 2, 1989).

3. Ann H. Karmos and Carol M. Jacko, "The Role of Significant Others During the Student Teaching Experience," *Journal of Teacher Education*, vol. 28, no. 5, 1977, pp. 51-55.

4. For a discussion of the SEE findings regarding the basic educational beliefs, attitudes, and values, see Su, pp. 75-151.

5. See, for example, University of California Review Committee on Education, *Report of University-Wide Programs* (Berkeley: University of California, 1984), p. 9.

6. Kenneth R. Howey and Nancy L. Zimpher, "Case Studies of Elementary Teacher Preparation – Programs in Six Schools and Colleges of Education," paper presented at the annual meeting of the American Educational Research Association, Washington, D.C., April 1987.

7. Howard Becker and Blanche Geer, "Student Culture in Medical School," *Harvard Educational Review*, vol. 28, 1958, pp. 70-80.

8. Robert J. Friebus, "Agents of Socialization Involved in Student Teaching," *Journal of Educational Research*, vol. 70, 1977, pp. 263-68.

9. John I. Goodlad, and M. Frances Klein, *Looking Behind the Classroom Door* (Worthington, Ohio: Charles A. Jones, 1974); and Dan C. Lortie, *Schoolteacher: A Sociological Study* (Chicago: University of Chicago Press, 1975).

10. Dan C. Lortie, "Teacher Socialization: The Robinson Crusoe Model," in National Commission on Teacher Education and Professional Standards, *The Real World of the Beginning Teacher* (Washington, D.C.: National Education Association, 1966). K